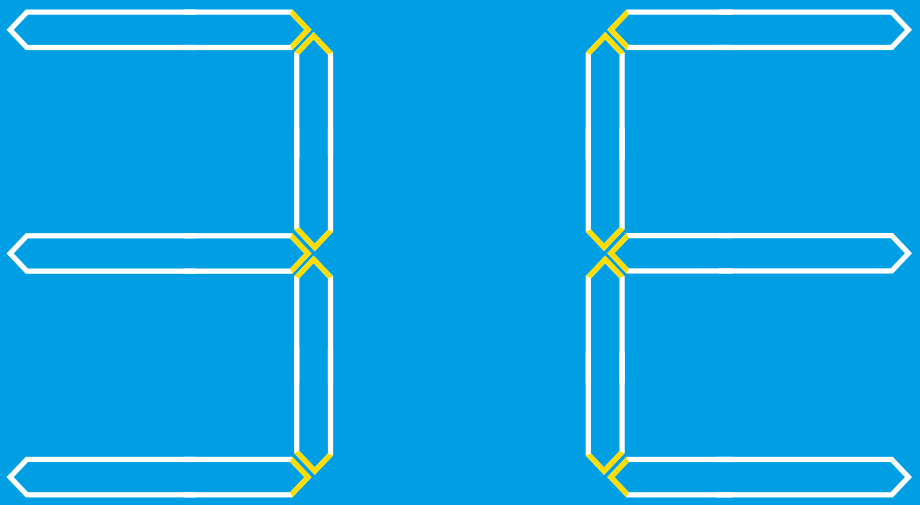
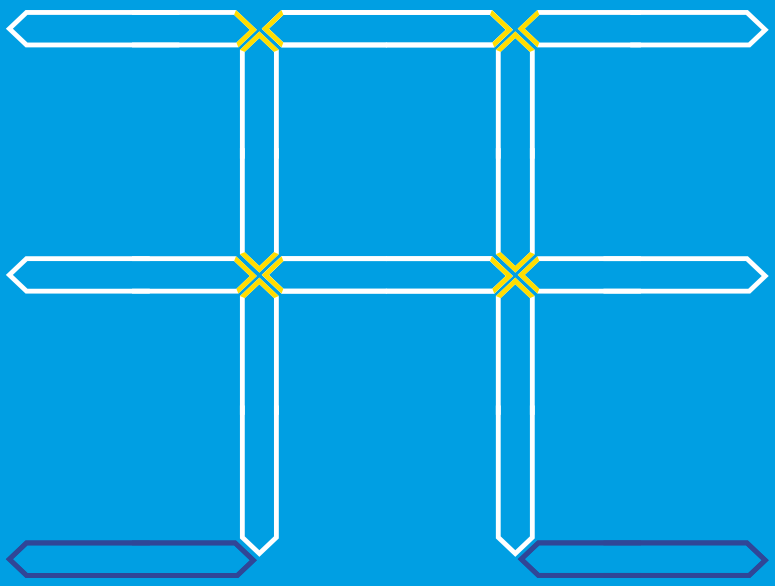
Cumulus Hong Kong 2016
Cumulus Working Papers
33/16

Open Design for E-very-thing

21 – 24 November 2016
Hong Kong Design Institute





Open Design for E-very-thing
EXPLORING NEW DESIGN PURPOSES

cumulus
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HONG KONG DESIGN INSTITUTE
香港知專設計學院
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Cumulus President's Introduction

Cumulus renewal for a better world

Conference after conference the Association grows, Cumulus members travel and meet each other in new places across the Continents, and we are happy to explore a new area of Asia such as Hong Kong, where we know to have many friends.

Altogether, during the last conference in Nottingham, we chose a new Board of the Association. This new team, together with our supportive General Secretariat and myself, will have the honour but also the responsibility to further guide and develop the Association in the coming three years.

Any suggestion, idea and also criticism about how we are doing now and how we would like to do in the future is highly valuable and welcome, as we really want to do our best to improve the Cumulus Association.

Our Board, our Secretary and our whole community of members are a worldwide representation of the global context in which our schools work to educate designers and to train future researchers and professors. Thanks to this diversity, the Association is able to understand and stimulate different points of view, and to address problems from different backgrounds and perspectives.

However, our attention is broader. It overcomes the borders of our Association and it turns towards the world and the delicate historical, political, social moment that we are living. The past 12 months have been rather difficult for most of us and the next ones are uncertain and can bring many of us worry for the future of the next generations we are meant to educate. The loss of an American student who was in an exchange programme in Paris, the problems encountered by many professors who had to leave their jobs on the spot in some countries, the innocent children killed in various violent circumstances, the walls built against foreigners and against migrants at the borders in several areas of the world… All these instances make us think about the sense of our daily work and about how we could react.

If, as Ezio Manzini often affirms, to be a designer means to be optimistic, meaning that design can contribute to a more positive future, then the Cumulus Hong Kong Conference can be considered as a first tassel to our reaction.

The 'Open Design for E-very-thing' theme is particularly appropriated to address this critical moment of the world we live in. It highlights the fact that designers and design students are able not only to design beautiful products, spaces, services, communication and fashion artefacts, but also to tackle huge global challenges, from climate change to inequality and poverty, from redistributing resources to business strategy. They can approach these themes with different methods, tools and visions; they can give birth to new solutions thanks to their creativity and their innovative attitude; they can facilitate their realisation with their capabilities of co-designing, visualising and prototyping; designers and design students can be, finally, also positive acupunctural activists for social innovation. Like vitamins for our bodies, thanks to their knowledge, creativity, capabilities and sensibilities, they can contribute to reinforce the values of equality, tolerance, peace and democracy in our environments.

Openness and engagement, the two keywords of this conference, are totally in tune with the identity and the aims of Cumulus Association. In fact Cumulus as an association would like to become a real co-creating platform -- a collaborative global relational space -- where energies and ideas are sharing purposes, where members work together to reach these purposes through research and education, to keep the borders open, to generate a higher level of optimism towards the future for the younger generations, to help students to become citizens of the world, where equality, tolerance, peace and democracy remain the fundamentals of all our actions.

Finally, 'Open Design for E-very-thing' has its roots in Hong Kong. The Conference made possible for all of us to discover the unique city of Hong Kong and its territories: the tours around the city, the trail hiking tour in the country parks, the very special activities such as jade jewellery making, dim sum-making, embroidery, drumming, mould making and casting helped entering some secrets of this city. All these activities remind us how important it is to make things with our own hands; to continuously feel through our fingers, feeding and training the intelligence of our hands together with that of our brains. Thanks to these hands-on activities, we could deeply enter in contact with the culture, the lifestyle and the tradition of Hong Kong.

The Cumulus Association Board, Secretariat and I would like to thank the team of Hong Kong Conference in particular Mrs Carrie Yau, Executive Director of the Vocational Training Council; Mr Leslie Lu, Principal of Hong Kong Design Institute, Dr Yanki Lee, friend of Cumulus who has initiated this conference project, Cecile, Frieda, Michael, Luna, Tony, Rani and all the staff and student volunteers and the creator of the logo.

Thank you! You did a wonderful job.

Luisa Collina
Professor, Dean of the School of Design – Politecnico di Milano
President of Cumulus International Association of
Universities and Colleges of Art, Design and Media



Photo by Massimo Ferrari

HKDI Principal's Message

On the needs of openness in the design of everything

In the past decade, the nature, practice and production of design(s) have undergone fundamental shifts in response to the challenges posed by the speed of change in convergence with technology, politics, sustainability, poverty, terrorism and emerging revolutionary cultures – questioning the tradition, methodology, pedagogy, thoughts and concepts of life, humanity and design, racing towards the creation of new and never before imagined aesthetics, while questioning the necessities of beauty itself.

In a dense and intense society like Hong Kong, we intimately encounter these social, economic and cultural upheavals arising from the legacy of our colonial culture, the lingering psychosis of survival in a transient society with no identity, idealism or reason - just meaningless obsession.

The theme of 'Open Design for E-very-thing' came about as a contextualised response to a global question, a question that resonates with the story of Hong Kong as the merging lane of cultures and peoples, but more importantly, it alludes to the new universal possibilities of design at a time when clashes and exchanges between cultures, ideologies, peoples and society have reached a new level of din and savagery, demanding new poetics of creativity and piecing ethical and sustainable solutions, and new expectations of design of open processes, engagement and participation.

Cumulus Hong Kong 2016 examined Open Design under six tracks – Education, Empathy, Engagement, Environment, Ethnography and Experiment. Through exploration and discussions, our hope is that it would help re-ignite the purpose and place of design in the increasingly complex yet interdependent world that demands a new set of solutions and processes in the future of design.

Leslie Lu
Principal and Academic Director
Hong Kong Design Institute

Conference Chair's Reflections

Cumulus 2016 HKDI: A Celebration of Community, Creativity; Cooperation

2016 will be forever remembered as a year of global political disruption. The United Kingdom's citizens voted in the majority to leave the European Union, putting the future of the EU in question and further diminishing the sovereignty of member nations struggling with the challenges of economic survival and national security.

Donald Trump was selected President of the United States by the arcane Electoral College, a Constitutional compromise process for determining the presidency, established by the Founding Fathers in 1787. Although Hillary Clinton won the citizen vote by nearly three million more ballots than Mr Trump, she now joins former Vice President Al Gore, whose ballots were also greater than his opponent, George W Bush, as candidates elected by the people, but made unable to serve by the dubious decision of the 538 individuals who determine arguably the most powerful leadership role in the world.

When I took the stage to address the Cumulus Hong Kong delegates, I did so with a heavy heart. I was one of the proud Americans who believed Hillary Clinton was the most prepared individual to ever run for the presidency. I remain one of the citizens of the world utterly dismayed that a person who has mocked people with physical conditions, disparaged governments, and demeaned women as his sexual playthings is serving as President of the United States. But, as a pragmatist and as a proponent of positive thoughts and actions, I decided to share an historical view of the evolution of our species, from the vantage point of the women who have made our world great, as inspiration for what we can all do to promote international equity and quality of life, *by Design*.

Framed with the accolade of "Nasty Women", in honour of Secretary Clinton, and Mr Trump's sophomoric criticism of her in one of their debate appearances, I reminisced about the original Nasty Woman, Eve, responsible with a bite of forbidden fruit for evicting us from the Garden of Eden, (but of course, we only have the word of, most probably, male authors of the Old Testament for that claim).

Wu Zetian, the only Empress Regnant of China (684) in more than four millennia, reformed the system of education and government, enhanced agriculture, and created a prosperous regime with social stability.

A young peasant girl, Joan of Arc, who led the French to victory against the English in 1430, was captured and burnt at the stake in 1431. She was nineteen years of age.

Queen of England and Ireland from 1558 till her death in 1603, Elizabeth I defied all odds of survival and created kingdom-wide literacy, great achievements in the arts, support of global exploration and scientific advancement.

Madame Curie was the first woman to win a Nobel Prize, Physics in 1903 and the only woman to win a second time, for Chemistry in 1911.

In 1932, Emelia Earhart became the first female aviator to fly solo across the Atlantic Ocean.

Katherine Hepburn entertained in a brilliant sixty-year film career, and took charge of her 17 careers in defiance of the "Studio System", buying properties and managing their development, while wearing pants, a most unfeminine statement in the 1940's. Her trademark trousers became so influential, the Council of Fashion Designers of America bestowed her their 1986 Lifetime Achievement Award.

Indira Gandhi became the first female Prime Minister of India in 1966. She was the second longest serving Prime Minister at the time of her assassination in 1984.

Elected as Prime Minister in 1969, Golda Meir was the only woman honoured to serve Israel in that capacity, and the first female leader to be known as the "Iron Lady".

In 1974, I became the first female industrial designer in the New York City offices of Raymond Loewy. The "Mad Men Era" of discrimination and resistance to women in traditional male roles was still firmly in place, but I was determined to convert the attitudes of exclusion and did so by developing the methodologies and philosophy of *universality* and *inclusivity* by design, with the "Elder Empathic Experience", by which I was prosthetically transformed as women in their eighties to experience the range and realm of the challenges of daily living that confront elders and peoples of all abilities.

"Nasty Women" all, we broke through glass ceilings, erased stereotypes, and embraced the sensibility of gender equity for the most balanced view of daily life and the creation of exemplars that define a quality life for every person.

My point is this, without conviction, without daring, and perhaps most important, without knowledge, no woman, man or child will thrive. And it is this gift, the fruits of education, *knowledge*, that will continue to broaden our horizons, build on our successes, and embolden a vision for tomorrow that anything and everything is possible with what we can accomplish together, for the future, today.

Every person enters life with the promise of potential and what will be in the years they inhabit this planet. Each of us has hopes and dreams that balance with needs and requirements. The delivery on all of these expectations is a matter of *Design*. The exemplars in our lives will be the result of understanding and the meeting of unique desires with earnest and elaborate empathy, in thanks to *Design*.

Dr Patricia Moore
Conference Chair

Summary of Keynote Speeches

Six internationally renowned design educators and practitioners were invited to give keynote speeches at Cumulus Hong Kong 2016, offering a wide spectrum of perspectives on open design, its nature, function and role to play in society, and opening up a platform for intellectual exchange and reflection.

Design is often seen as a creative process through the questioning of problems and its resolution to address needs and experience. Without any purpose to achieve, there will be no design.

Debatable as this supposition may be, it has not been challenged by open design, which, for our purpose, is a response to the accelerating convergence of the various aspects of human life, including but not limited to politics, economics, technology, healthcare, ethics and morality. Open design seeks to highlight the importance of by opening up, or democratising, the creative process to non-design professionals. End users, stakeholders and general members of the community are engaged in one way or another through the journey of design. For one thing, this is built upon the notion that recognises the collective wisdom outside the design community that should be respected and mobilised. More importantly, involving non-design professionals in the creative process also enables designers to better understand the needs of their clients, the purpose of their creative projects, and thus empowers them to come up with better designs that serve the purpose more effectively.

But how do we open up the design process? How open are we, as design educators and practitioners, in exploring design approaches and possibilities without succumbing to the confusions and hectic changes around us?

Hideshi Hamaguchi, the internationally recognised business strategist and concept developer from Japan, offered a two-pronged strategy for innovation and open-mindedness. First, break the bias. Forget the rules. Throw away definitions. Try to come out of the paradigm that defines whether something works or makes sense. To do so, however, Mr Hamaguchi said one has to fully understand what the bias is. One needs to find out why such an idea was formed, and how it came about. Only when we know where the boundaries are can we break through them.

The second strategy focuses on communication with and understanding of the target audience. ‘It is the era of the story,’ Mr Hamaguchi proclaimed, tracing how consumer behaviour has evolved over the past 40 years. Function was the strongest determinant of consumer purchase decisions at the beginning, he observed. It was later replaced by the design of the product, which has now been taken over by the story of the product and even that of the designer. Mr Hamaguchi therefore called for ways of connecting the function, the design and the story to increase the appeal of (open) design for the stakeholders and the general public.

Mr Hamaguchi’s advocacy of open-mindedness in design was shared by Tim Yip, the award-winning costume designer and film art director from Hong Kong, though with a different focus. Whereas Mr Hamaguchi was more concerned about the articulation and implementation of creativity, Mr Yip





tended to focus on a self-inquiry of the origin of things for the cultivation of an open mind. In his inquiry for the origins of his cultural identity, Mr Yip was greatly impressed by the relativism of the Chinese/Eastern culture, as illustrated by the design of a Chinese courtyard, for example. For him, the scenery of a well-designed Chinese courtyard is dynamic, rather than static, because it changes as the visitor walks and arrives at different locations. Sometimes there is even 'scenery within scenery', as the Chinese saying goes. The allocation of courtyard space also illustrates the co-existence of two parallel worlds, i.e. one of existence (occupied by built structures or horticulture) and non-existence (emptiness). He was thus inspired to conclude that designers should go beyond the surface, open up the superficial layers and examine the origin of things. A good grasp of the essence or fundamentals would enable the designer to become more flexible and adaptive in practice, free from the constraints of the form and without losing sight of what is important and what not.

Similarly, Hong Kong-born architect, interior and product designer Steve Leung drew inspirations for his projects from traditional Chinese aesthetics and philosophy. He shared a number of projects in Hong Kong and around the world to illustrate his open embrace of tradition and modernity, as well as the Chinese and Western cultures. Specifically, four themes were discussed in his keynote speech: (1) integrity and selflessness (as symbolised by the hollow stalk and resilient texture of the bamboo), (2) moderation (optimal balance and stability), (3) peace (tranquillity) and (4) harmony (along with a generous tolerance of diversity). These are all basic values of Chinese culture that have transcended the social evolution over the millennia.

Coincidentally, the quest for the basic essence was also echoed by Dr Clemens Thornquist from the University of Borås, Sweden, who spoke from the academic or pedagogical perspective. He emphasised the important role of basic research by discussing three major challenges in design education: (1) the dominant focus on applied issues in art and design; (2) the anxious relationship between design and science; and (3) the epistemological challenge of design and aesthetics.

To overcome these challenges, Dr Thornquist called for serious questioning of the conventional categories and definitions, enabled and empowered by a thorough understanding of design. Using textiles as an example, he said it is important to ask basic questions such as 'what is a garment?' and explore new answers with experiments. This is the basic but essential research that should not be confined to the freshmen/foundation year at design schools. It should be sustained throughout the duration of study, not only for students, but also for teachers and researchers.

In addition, an emphasis on techniques, both acquiring traditional skills and developing new ones, will help bridge the gap between design and science, which can be defined as the intellectual and practical activity to study the structure and behaviour of the natural and physical world. Empirical work will help designers develop new and multiple perspectives of addressing the same issue. Finally, Dr Thornquist reminded the audience of the importance of discovery, rather than the justification, of design. The process, he believes, is 'completely relevant' to empirical thinking and opening up theoretical possibilities in the study of artefacts. This is a new kind of aesthetics, or what he called 'the metaphysics of art and design'.

At a time when information technology and artificial intelligence are taking over human jobs, including creative ones, Professor Wang Min of the Central Academy of Fine Arts (CAFA) in China suggested a re-definition of the value of design as a driving force of innovation. Indeed, this has been increasingly recognised across the world, from global business heavyweights such as IBM that are recruiting more designers than ever, to the education policy-makers in China and Singapore who are introducing design thinking in the elementary and secondary curricula. Professor Wang thus called for a curriculum reform at design schools that emphasises more on strategic thinking and the relevant skills. He said design education nowadays should offer a contextual inquiry into the relationship among design, business and technology. Design education should also nurture empathy in students, or the ability to understand human needs and to become socially responsible individuals. Quoting former IBM chief executive Thomas J Watson Jr's famous tagline, 'Good design is good business', Professor Wang added that good design also creates cultural values and connects people with art and technology.

History has never witnessed such an overwhelming dominance of technology in human life. Over the past decades, technology has not only revolutionised how people learn and work, but also changed their lifestyle, behaviour and way of thinking.

As ageing becomes a pressing global issue, technology is also extending its reach to support those who lose their autonomy or mobility as a result of age and disease.

However, internationally renowned designer and gerontologist, Dr Patricia Moore, reminded us of the irreplaceable leading role of design in empowering the aged and disadvantaged. When age and ailing health are depriving people of the ability and independence to manage the environment around them, design can step in and make a difference. 'The time has come for design to be diplomatic, powerful, [and] an ambassador for change,' she said. 'Only design can be holistic and humanistic. Only design has the sensibility to define lives.' Empathy and inclusivity, which, Dr Moore believes, are now pivotal to human survival, can be achieved through design rather than technology. This is because the creativity, flexibility and ingenuity of design can empower people, regardless of their age, gender, nationality and physical conditions, with autonomy, accessibility (both in physical and financial terms) and equal opportunity to pursue the quality of life required for managing the present, as well as the uncertainties of the future.

But she cautioned that design is not the answer to the ageing issue. Design is just better positioned to offer help than technology. The qualifying criteria of the best design, according to Dr Moore, are: (1) accessibility, (2) mobility, (3) usability and (4) affordability. These four attributes are essential to empower the people for which the design is developed. To achieve all these, empathy is imperative. 'Without empathy, we stand no chance. We certainly won't thrive. And we won't survive,' she concluded.









Call for Papers and Formats

The Cumulus Hong Kong Conference accepted not only research papers as academic contributions, but also artefacts, fashion collections, movies/videos and workshops, which were presented in the Open Design Exhibition, Movie Screening and Open Design Academic Workshops to stimulate discussions and interactions. They were submitted in response to the open design debate and the six-tracks of the conference.

Final submission formats include:

Full papers were limited to 6,000 words presenting original, unpublished ideas or research. Paper presentations were held at the conference grouped according to the six tracks. Each author had 20-30 minutes for presentation, followed by a Q&A session.

Short papers were limited to 3,000 words on on-going projects that were open for discussion. Paper presentations were held at the conference grouped according to the six tracks. Each author was given 10-20 minutes for presentation, followed by a Q&A session.

Artefact - product or artwork proposals were no more than 1,500 words on open design projects with a thematic statement of artwork, images, sketches or drafts, links to video documentation online and technical and logistical requirements for display. Artefacts were showcased at the curated Open Design Exhibition throughout the conference in the forms of actual works, models, prototypes and artworks.

Fashion collection proposals were no more than 1,500 words on open design projects with description of the fashion collections, images, sketches or drafts, links to video documentation online and technical and logistical requirements for display. Fashion pieces were showcased with other artefacts at the curated Open Design Exhibition throughout the conference.

Movie/video proposals were no more than 1,500 words on open design projects with movie/video title, project description, duration, links to video documentation online, technical and logistical requirements, preference and specific way of showing. Movies/videos were showcased in the Open Design Movie Screening sessions with each author presenting their works after screening and discussions at the end of the sessions.

Workshop proposals were 1,500 words or less describing interactive sessions that encouraged active participation in open design. Selected workshop proposals, each 2-3 hours long, were organised by proposal authors during the conference. Other conference attendees were encouraged to join the design activities.

Six Open Design Tracks

Six tracks starting with an ‘E’ in response to latest design research and education discussions were co-developed with our international academic partners. A worldwide open call for submissions on these tracks was made.

The result was overwhelming. In the abstract submission stage, we received 338 submissions from 43 countries. The average acceptance rate for the conference was at 53%. A total of 366 reviewers were on board to assist the two stages of the double-blind review process.

Open Design For Education

Chaired by Professor Sally Wade (Sheffield Hallam University, UK)
Co-chaired by Professor Rachel Troye (The Oslo School of Architecture and Design, Norway), Bente Irminger and Linda Lien (Bergen Academy of Art and Design, Norway)

Design thinking is increasingly applied to different contexts and business models beyond its traditional arena. As a result, designers are expected to identify solutions for complex problems, which extend beyond the artefact or service and require new knowledge, skills sets, and understanding.

Creating innovative solutions not only for today’s society but also future generations is a global challenge. Designers are faced with more opportunities than ever before. This conference track examines the impact on future design education and asks the following questions:

What is the nature and scope of design education in order to prepare students for the ethical, political, socio-economic decisions they will be confronted with?

How do we educate designers to engage citizens in co-creation and participatory design initiatives?

What is the role of the academia in meeting societal expectations and global challenges?

Open Design For Empathy

Chaired by Professor Lorraine Gamman (Central Saint Martins, University of the Arts London, UK)
Co-chaired by Professor Cai Jun (Tsinghua University, China), Roger Bateman & Dr Claire Craig (Sheffield Hallam University, UK) and Niels Hendriks (LUCA School of Arts, Belgium)

The ‘Empathy Deficit’ (Obama 2006) refers to a social divide derived caused by the failure to recognise and celebrate empathy as an essential mental habit that should inform human action. Over the years, designers have significantly benefited from introducing empathy into their research processes. Design ‘WITH’ empathy has helped define real but unexpressed and unmet needs. Yet the role of designers can be separated from the so-called mysterious-to-them users. As open design encourages more citizens and non-designers to embrace innovation, design ‘FOR’ empathy may have new value beyond consumerism and individualism to promote empathetic understanding among diverse sectors of society. Can empathetic ‘things’ (the socio-material interactions surrounding the processes and products of design) help find new ways to bring diverse or conflicted parties to better understand the perspectives of the ‘other’? This track will explore empathy and how design FOR empathy might contribute to social change.

Open Design For Engagement

Chaired by Professor Adam Thorpe
(Central Saint Martins, University of the Arts London, UK)
Co-chaired by Professor Leon Cruickshank (Lancaster University, UK), Virginia Tassinari (LUCA School of Arts, Belgium), Dr Yanki Lee (Hong Kong Design Institute, Hong Kong SAR) and Dr Francesca Valsecchi (Tongji University, China)

The novelty, diversity and complexity of current social challenges and the contexts in which they are situated demands similar diversity of interventions to address them. Multiple and diverse proposals are most readily generated via the involvement of many different people, with many different perspectives and resources, contributing to the process of innovation. These are the tenets of 'open innovation' – that by 'opening up' the innovation process – the process of coming up with, implementing and exploiting new ideas – we can increase the diversity of, and capacity for, innovation within a (eco)system. To 'open up' the innovation process to a diversity of actors – to democratise design innovation – a diversity of people must encounter the design process such that they can engage with and contribute to it. This track aims to explore these early stages within the collaborative innovation journey. Enquiring into the strategies that are applied to support the assembly and formation of publics, from which design coalitions may precipitate. We ask 'What are the methods, tools and approaches that favour encounter and foster engagement – and ultimately participation - in 'open' processes of collaborative enquiry, visioning and production?' From living labs to design performances - we are interested in the platforms and practices that 'stage' these encounters and engagements. We also welcome the sharing of examples, as well as reflections and theories as to what works in what contexts - how, why and for whom.

Open Design For Environment

Chaired by Professor Mathilda Tham
(Linnaeus University, Sweden)
Co-chaired by Susan Evans (Tongji University, China) and Dr Henry Mansah (The Oslo School of Architecture and Design, Norway)

The alarming environmental predicament provokes gigantic challenges for design, and also presents opportunities for new design practices.

To date the sustainability discourse has been focused on solutions in the technological or at least material remit. Yet, it is clear that the magnitude and complexity of challenges also require attention to both resistance to change and resources for change that may sit within the individual and communal emotional remit.

Realising future of sustainability poses challenges that are increasingly more complex, therefore requiring trans-disciplinary work and holistic and systemic design approaches. The designer is tasked to re-consider design practices, and think about the integration of new approaches. How can designers plan for and assess their success in meeting these goals? What frameworks, methods and tools can design adopt and evolve? How can designers engage in and host trans-disciplinary collaborations and participatory design? What skills must designers develop to embrace and harness design towards sustainability?

We are hoping for a diverse range of research endeavours that also engage keenly with previous efforts, future challenges, and show empathy to a wide range of stakeholders. Projects may be local and small, but should discuss how they relate to a bigger world.

Open Design For Ethnography

Chaired by Dr Francis Müller & Franziska Nyffenegger
(Zurich University of the Arts, Switzerland)
Co-chaired by Dr Zhao Chao (Tsinghua University, China) and Albert Tsang (Hong Kong Design Institute, Hong Kong SAR)

The role of ethnography in design has shifted from designers being informed of the 'users' in real-life settings by ethnographers to designers now being the ethnographers themselves, mixing the real and here with future intervention. Ethnographic methodology also changed from merely informing design to providing critical elements to the practices, especially the process. This encounter is also mutual, because ethnography gains new forms and possibilities as it is employed designerly. The freedom and experimental propensity in design research do reciprocate to the methodology itself. What does it mean by now for ethnographic design research? What will be the impact for this if design and production are further opened?

Open Design For Experiment

Chaired by Professor Maria Hellström Reimer
(K3, Malmo University, Sweden)
Co-chaired by Dr Liesbeth Huybrechts (University of Hasselt, Belgium), Professor Andrew Morrison (The Oslo School of Architecture and Design, Norway), Ann Merete Ohrt, Dr. Jacob Bang, Dr. Kirsten Marie Raahauge and Dr. Troels Degn Johansson (The Royal Danish Academy of Fine Arts, Schools of Architecture, Design and Conservation, Denmark)

Practices of experimentation are of particular importance to contemporary design research, be it orientated towards social, cultural, and organisational contexts of meaning, towards manufacturing and the industry, or towards form and artistic practice. As a tentative play with contingent fields of forces, experimentation also presents important speculative and differentiating potentials. In this framework of experimentation, errors tend to pop up in the concrete design process, understood as something uncontrolled that happens to the material in the process of forming it in some intended way. This being the case also in other disciplines, the interest here focuses on the effect of errors when working concretely with form, materiality and space. Sometimes errors have unproductive effects, but it might also lead to productive results. Actualising both potentials and risks, the track will address whether errors can be embraced via experimentation within design practice and design research. This call for abstracts is about practices of experimentation in design processes, and how to deal with errors in this practice. We especially encourage critical explorations of the concepts of error and experimentation, and of the role these elements play in design processes as obstructions as well as openings toward new knowledge and objects.

Open Design For

EDUCATION

The Education track was extremely popular with over 100 submissions. The submitted proposals were rigorously reviewed and due to the scale of submission, those selected were of a particularly high standard. They led to five dedicated sessions at the conference, exploring a wide range of pedagogic practice. Research themes ranged from the use of technology in teaching and learning, interdisciplinary practices, collaborative learning to the future of creative pedagogies. In all there were 22 papers presented. The quality of the discussion between the audience and at panel at each session was engaging, informed and supportive, extending networks around specific research interests.

Professor Sally Wade, Sheffield Hallam University, UK;
Professor Rachel K.B. Troye, Oslo School of Architecture and Design (AHO), Norway;
Bente Irminger & Linda Lien, Faculty of Fine Art, Music and Design at University of Bergen, Norway

A study of the multi generational relationship with making through mediated designing in collaborative, digital environments: implications for learning and open access fabrication

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ABSTRACT

In this paper, the researchers investigate the various ways in which school-aged, ‘Net Generation’ children learn in non-linear, mediated, collaborative ‘making’ environments enabled by online communities of citizen practitioners and maker groups. In addition, the study investigates these learning methods in relation to children’s future attitudes to formal education and their engagement with open access digital fabrication facilities.

The research draws on primary data obtained from the observation and analysis of children who attend three-dimensional (3D) printing clubs hosted by one of the authors. These clubs target at children who have just begun formal school education, from the age of six. The clubs are informal and relaxed, allowing a great deal of creative freedom. Thus, the children can be observed in as natural a state as possible. They have access to 3D printers, computer-aided design software and 3D printing pens to explore various technological and design processes. They can choose to work together or alone, and participate in group discussion in an unforced way. The clubs are regular, weekly events, ensuring that the excitement elicited by access to these novel tools does not alter the children’s natural behaviour and obscure the implications of such behaviour for learning and openaccess fabrication.

The research concludes with an analysis of the educational benefits of shared design practices and digital fabrication and their unique potential as tools for progressive education in the learning spaces of the future.

keywords
Digital fabrication, communities, learning and engagement

INTRODUCTION

This paper presents emergent research investigating the different ways in which school age, ‘generation net' children learn, through non-linear, mediated, collaborative ‘making’ environments, enabled by online communities of ‘citizen practitioners' (Schon, 1983) and maker groups. In addition to this, the study investigates these learning methods in relation to children’s future attitudes to formal education and their engagement with open access digital fabrication facilities. This study is based on several concurrent research projects that are being undertaken at Edinburgh Napier University. They include 'leisure' as a basis for learning and engagement; what we can learn from children and their interaction with digital craft; online communities' influence on the physical learning environment and the tangible outputs; what this could mean for an open access, digital fabrication facility based in a university campus and finally, how this might impact learning and teaching in Higher Education in the future.

Digital Making and Learning

Making is known to be a pleasurable experience. According to Dissanayake (1995) ‘there is something important, even urgent, to be said about the sheer enjoyment of making something exist that didn’t exist before, of using one’s own agency, dexterity, feelings and judgement to mould, form, touch, hold and craft physical materials, apart from anticipating the fact of its eventual beauty, uniqueness or usefulness.’ Ingold (2004) states that 'craft is a perspective that acknowledges that building and making constitute a material way of knowing, learning and acting within the world. Knowledge comes not just in the planning but in the doing. The material presents a particular set of options and the crafter responds and back and forth it goes.' The process and technique of craft and the 'unity of head and hand' 'establish a repertoire of learned gestures. The gestures can be further refined or revised within the rhythmic process that occurs in, and sustains, practicing. Prehension presides over each technical step, and each step is full of ethical implications.' (Sennett, 2008 : 178)

The concept of making and craft as 'leisure' with embedded opportunities for self reflection and learning, stem from the Greek definition of 'schole', meaning both 'leisure' and developing into the contemporary word 'school'. The pure definition of schole, according to Klieber (1999 : 1), 'reflects a freedom from obligation and attention to the refinement of human character.' This is mirrored by Scruton who said 'leisure is not the cessation of work but work of another kind, work restored to its human meaning, as a celebration and a festival.' (1998 : 14) Schole has developed into 'alternative' educational systems, including Waldorf-Steiner, who place emphasis on 'the importance of the sensory system, imagination and refinement of sensibilities' over 'generic thinking skills interventions / programmes'. (Oberski, 2006 : 336)

The idea that education should be more experiential and connected to real world objects is originally attributed to John Dewey but also to many other scholars and innovators. (Deway, 1902; Freudenhal, 1973; Frobel and Hailmann, 1901; Montessori, 1964 and Friere (1974) introduced the idea of culturally meaningful curriculum construction, in which designers get inspiration from the local culture toward creating 'generative themes' with members of these cultures. Therefore, students' projects should be deeply connected with meaningful problems, either at a personal or community level, and designing solutions to those problems would become both educational and empowering. (Blikstein, 2008)

Digital making, particularly 3D printing, engage the maker in a number of ways that differ from 'pure' hand craft or that which has been uniformly 'manufactured' by machine. (Rotman, 2013) Pye (1968 : 4) defines 'the workmanship of risk' as 'workmanship using any kind of technique or apparatus, in which the quality of the result is not predetermined'. The 'workmanship of certainty' is that 'always to be found in quantity production. The quality of the result is always predetermined before a single saleable thing is made.' It could be argued that 3D printing combines the best attributes of risk and certainty. According to Gershenfeld (2012 : 57-58) digital fabrication desegregates 'hard and software and physical science from computer science. The core theme of our research on digital fabrication is not about computers controlling tools, but about the computer itself as a tool. And it’s not about programs describing things, but about things actually becoming programs – about putting codes into material.'

Online Communities and Engagement

In addition to this, the computer has become more than commonplace, as Marc Prensky identifies 'the arrival and rapid dissemination of digital technology in the last decades of the 20th century” (Prensky, 2001' 1-6) was in fact a 'singularity' – an event which changes things so fundamentally that there is absolutely no going back” (Prensky, 2001' 1-6). This can also be described as the 'birth of the digital native – humans born into a digital age and speaking digital language natively, as opposed to ‘digital immigrants’ who, born into the analogue age, have learned the language and speak it with an accent, whilst conceptually continuing to think in analogue'. (Thompson, 2014 after Prensky 2001) Combining the positive aspects of making and digital connectivity is 'digital craft', including 3D printing technologies. These have the ability to ‘retain the soul of the material and the skill of the human hand, while also benefitting from the precision, efficiency and increasingly unrestricted structural parameters of digital design and fabrication’. (Johnstone, 2015)

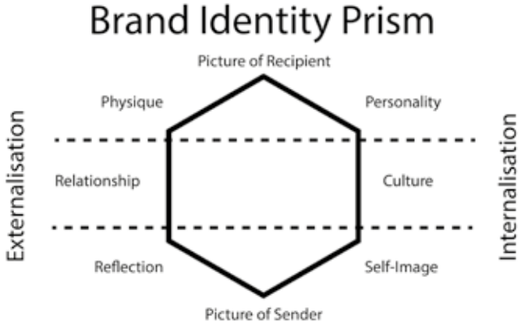


Figure 1. Kapferer, 1997

The emergence and adoption of Social Networking reflects a maturing ‘digital culture’ (Deuze, 2006) and greater connectiveness between producers and consumers of cultural behaviours (Bolter and Grusin, 2000) that provide clear indicators of digital adoption within communities towards new e-cultural nodes of engagement. (Pengelly and Thompson, 2014) People from widely dispersed locations have been able to create new networks through interactive media, linking individuals in a way which ‘transcend time and space’ through flexible diffusion structures (Bandura, 2001). The individual is afforded a voice within the social grouping, a phenomenon which, Van House (2007) suggests offers greater levels of self-expression reflecting the individual’s unique point of view, creativity and aesthetic sense. Davies (2006) identifies that such networks form an ‘affinity space’. These have afforded and promoted new forms of collaboration and participation across both mixed and specialist social groups. Collaborative spaces; in which expanded conceptions of peer-to-peer learning and engagement, over time and distance through mediated learning and sharing are engendered. (Pengelly and Thompson, 2014) In this way, the project's concept mirrors structures within Kapferer's Brand Identity Prism, where the made object, externalised and internalised ideas, values and culture, merge as an extended whole.

Consequently we may, based upon the work of Thompson and others, posit ‘An Online Maker’s Identity Prism’



Figure 2. Thompson 2016 after Kapferer

It is to this model we can bring conceptions of Wenger and Snyder’s ‘Communities of Practice’, ‘groups of people informally bound together by shared expertise and passion for a joint enterprise’(Wenger and Snyder 2000), who predicted the future ubiquity of these groups which are implicit in the online communities of makers discussed here. Li suggests that in the context of second language learning: ‘online virtual communities formed through common interests of participants from both L1 and L2 backgrounds (e.g., chat rooms, fan clubs, social networking, and video gaming sites) provide not only safe and productive space for second language learning but also opportunities for social learning that is often lacking in a regular teacher-centered classroom.’ (Li 2012)

A position also adopted by Leppisaari and Lee who identify that “Social software, like Web 2.0 enables students to collaborate through computermediated communication and to form learning communities in which they construct and share knowledge.”(Leppisaari and Lee 2012). Consequently, we may begin to adopt a similar position in developing the language of young learners in mediated designing through collaborative, digital communities.

Children and Digital Technologies

This research draws upon primary sources including the observation and analysis of children who attend 3D printing clubs hosted by one of the authors. These clubs are aimed at children just starting their formal school education, from the age of six. The clubs are informal and relaxed to allow a great deal of creative freedom. The children can be observed in as natural a state as possible. They have access to 3D printers, CAD software and 3D printing pens to allow them to explore the technology and design process in different ways. They can choose to work together or alone, and can participate in the group discussion in an unforced way. The clubs are regular, weekly events to ensure that the excitement and novelty of the access to these tools does not overshadow natural behaviours and obscure what can be learned about the implications for learning and open access fabrication. At this time, the researchers are also looking at online 'making' clubs and communities. These communities, which include people of all ages and backgrounds from across the world, provide an unencountered environment in which children can learn, consume and actively contribute. (Jenkins et al., 2013). The children of today’s generation are ‘digital natives’(Prensky, 2011). This nativity means that they belong to the community of the world, perhaps even more so than the communities in their physical locale.

Subscriptions to communities such as Minecraft offer children the opportunity to construct fictional realities in which they can make “real” decisions, experience life like failures and build relationships with real people. All of which, allow children to practice at life and overcome the “first pancake dilemma” a common idiom explored by the psychologist, Tory Wilcox (2008) to explain that like life, one can only create the perfect pancake with practice and preparation.

Despite the mass media commentary on the isolation of children who no longer go outside but instead stay in their rooms on their computers, these online communities allow children to interact with their friends from their immediate geographical proximity as well as children from across the world (Blackwell, L. et al., 2016). Li (2016) comments that a wide and varied social interaction such as this, provides children with information, ideas and opinions from different cultures, all of which contribute to the child’s development into a well-rounded, empathetic and world-savvy digital citizen, both on and offline. This type of learning cannot be taught in a traditional classroom setting but can only be learned by experience. Therefore, despite children’s behaviour not meeting the expectations of a nostalgic, 'digital immigrant', these online social interactions may be more valuable and beneficial that any interaction that could be experienced in the park playing football.

Despite the abundance of information in addition to the learning and social opportunities available online, certain things cannot yet be taught, learned or achieved there, as well as they could be in a child’s physical reality. These include the digital making of physical items created by 3D printers, laser cutters or CNC machines. There are some companies who offer these making opportunities as services, including 3D hubs, who claim that if you have a 3D file, you can upload it and it will be 3D printed and delivered to you within 48hrs. (3D hubs, 2016). However, few, if any of these services are aimed at children and most lack the learning stage that leads up to the creation of the necessary 3D file.

Maker spaces, groups and hacklabs, although primarily aimed at adults, are beginning to invite children to explore and experiment. As Dougherty (2014) explains, parents who attended Maker Fairs, noticed how their children liked to play with and use tools to tinker. He says that, “we need adults to facilitate …and create maker spaces in their communities that are accessible to all children.” Once children see themselves as learners who have good ideas and can transform these ideas into reality they become empowered and passionate lifelong learners.

Open access digital fabrication facilities appear to adhere to this by providing creative spaces, collaboration and creative problem solving, while traditional school models emphasise uniformity and predictability. Perhaps formal education institutions need restructure their methods or at least recalibrate their goal setting and expectations to allow room for exploration and experimentation, which may offer far richer learning opportunities. By welcoming

online communities and encouraging the creation of child accessible maker spaces and groups in all local communities, the implications for technology, in the context of making and learning, expand far beyond parental concern of physical social isolation and computer dependencies. It replaces the concept of technology as an artefact or function with the ideas of what it might facilitate on a personal and social scale. (Mizen, 2001)

Digital Making and Ownership

The way that information and designs are shared, in the context of digital fabrication, online communities and clubs, at this time, appear to be challenging 'rules' of manufacturing and intellectual property protection. The digital 'revolution' can be shown to be hugely influenced by an 'innovation ecology based on the combination of an open source approach and low cost fabrication employed in unforeseen applications'. (Troxler and Wolf, 2010 : 5) In addition to this, the way that children experience the ease of online making, redesigning, downloading, viewing and personalization of others' designs, with Minecraft, Scrap Mechanic and Vloggers like Stampy makes 'ownership' of visual outputs, patents and 'intellectual property' seem extraneous and outdated.

Gershenfeld (2005) pointed out that files of digital fabrication designs can be sold in the same way [as MP3 music files and apps] catering to specialized interests that would not support mass manufacturing. Von Hippel's earlier research (2005) stated that the empirical finding that users often freely reveal their innovations has been a major surprise to innovation researchers. According to Chesborough (2006) the major issue is the absence of a business model built around intellectual property rights [in open source, digital fabrication and the Fab Lab culture]. The open source movement has fundamentally questioned traditional beliefs in the very notion of intellectual property (Boldrin and Levine, 2008) Outcomes of Troxel and Wolf's research (2010) showed that Business users tend to doubt the validity of open source approaches but are not inclined to similarly scrutinize the traditional closed IP route. Instead of trying to restrict access, Gershenfeld showed that 'flourishing software businesses have sprung up that freely share their source codes and are compensated for the services they provide. The spread of digital fabrication tools is now leading to a corresponding practice for open-source hardware'. (2012 :55)

Open Access Digital Fabrication

The first 'Fab Lab' was created by Professor Neil Gershenfeld at the Massachusetts Institute of Technology in his 'Center for Bits and Atoms' in 2003, then three $50,000 Fab Lab 'kits' were taken out into several urban communities. (Gershenfeld, 2005) He said of their inception 'the advent of Fabrication Laboratories (Fab Labs) opens up the possibilities for engaging in the production of these technologies directly, making equipment and materials for such digital fabrication available beyond the borders of a few highly specialized companies and research institutions and putting them into the hands of the general public. In doing so, it is hoped that a widespread, diverse and personally relevant creation and use of technology can be fostered'. (Gershenfeld, 2012 : 54) 'Comprised under the name of 'digital fabrication', they [the public] create material objects from digital files and together with consumable materials they form an infrastructure to 'make (almost) anything' (Gershenfeld, 2012 :57). 'Fab Labs form part of a larger 'maker movement' of high tech do-it-yourselfers, who are democratizing access to the modern means to make things.' (Gershenfeld, 2012 : 48) Posch and Fitzpatrick (2012 : 497) added that Fab Labs are mostly peer-to-peer based and building on the ideas or interests people bring to the lab.

Research into the learning experiences of Fab Lab users, whether they are experts, students in higher education, school children, enthusiasts or museum visitors, has been ongoing since their inception. Their expansion, not only into formal learning institutions, but also meeting places that encourage informal learning is significant. This has been made possible within the last few years because the capabilities of digital fabrication tools have been increasing as their cost decreases, making certain models available to individuals or small communities. Accompanying this, there is increasing interest in providing access to digital fabrication technologies in educational contexts, for example through libraries, museum and in schools (Posch et al, 2010; Eisenberg and Buechley, 2008).

As Posch and Fitzpatrick highlighted, the structure of the Fab Labs which allows a more 'informal' route to learning, has led to interesting outcomes. Blikstein (2012 : 5) said 'the chameleon-esqueadaptivity, which is embedded in technology, permits the acknowledgement and embracing of different learning styles and epistemologies, engendering a convivial environment in which students can concretize their ideas and projects with intense personal engagement. There is rarely a fixed curriculum. Children use technology to build projects, and teachers act as facilitators of the process'. Workshops within Fab Labs have no specific structure and can resemble something akin to the unstructured, self-organised, hobby-led play found in school recess periods. According to Posch et al (2010 : 257) Fab Labs provide accessibility to modern means of inventions and are an important part of exploring concepts relevant for future developments and emerging fields of technological literacy.

Dlodlu and Beyers's research (2009 :41) concentrated on the relationship between secondary school aged girls and their engagement with engineering technology through their interaction with Fab Labs but the implications of their research has further implications. They said, 'although progress has been made in increasing the numbers of girls entering the SET pipeline, the great divide between girls and engineering remains due to a lack of familiarity with the nature and possibilities of engineering and engineering technology. When choosing a career in scientific fields, girls tend to gravitate towards professions that help humanity; thus fields of health and medicine are widely chosen by women.' Their research concluded that it indicated 'that exposure to a rapid prototyping environment is an approach that is effective in producing learners with a new curricular approach. (47)

Posch et al's research (2010), looked at participative creation and engagement when a Fab Lab was set up within an exhibition space in a museum which 'focused on providing an open and easy for every visitor accessible design and fabrication space focusing on identified key elements like creative prototyping and shared creativity within the range of the realized integrative system'. (254) Their study added to the discussion in that it investigated how the displayed, digitally made object affected the learning experience. They said, 'a big motivation to get active for children and people in general is seeing things they particularly like or by the prospect of becoming a leading example themselves. Objects resulting from amateur spirit and personal motivation are thus displayed next to professional examples from various application fields framing current technological developments in the context of artistic, scientific and social developments. A gallery displaying physical and virtual objects thus is a great opportunity for participants to display their creations but also as an entry point to discuss future potential of fabrication technologies and raising interest among a broad range of passing visitors. (255)

Results of Prior Fieldwork

This research builds on several projects and the pertinent fieldwork undertaken by the authors, includes findings from Vettese et al's AHRC project, where 3D printers were set up in a heritage environment to observe visitors' engagement and learning; Thompson's work with an international, socially mediated community of printmakers and preliminary observations from Allan's Wee Replicators 3D printing kids clubs.

The project by Vettese et al (2014) examined whether the attributes of 3D printing, which allow an element of direct personalisation in the making of souvenir artefacts, are firstly, more successful in creating memories of place and experience that are authentic to the visitor and secondly, whether visitors can be engaged more in the creation of meaning and interpretation through a creative process. The research team undertook a pilot study, funded by the Arts and Humanities Research Council in collaboration with Historic Scotland, in Stirling Castle in July 2014, producing 3D printed souvenirs in situ. The researchers then used structured interviews and ethnographic observations to capture the public reaction to having the artefacts and souvenirs printed out for them as part of their tourist 'visiting' and 'souvenir buying' experience and to capture their interest in personalisation. The different motivations for purchasing souvenirs and the ways in which they consumed souvenirs also became apparent.

Generally, the concept, processes, exhibit and souvenirs had a positive response from the visitors and participants. The way that 3D printing allows for individual, on the spot production of souvenirs also gave a special quality to the memento, meaning that each souvenir was completely unique. It had been made for each visitor at that moment in time, witnessed by them which seemed to give the small talisman even more meaning. One researcher observed that the value that even sceptical visitors felt was clear from their comments overheard when they walked away, with one saying 'this is your very own 3D printed unicorn, printed today at Stirling Castle, hardly anyone else in the world will have one of these'. Unlike previous research (Go, Lee and Russo, 2003; LaSusa 2007) suggested that the mass production of souvenirs led to a detachment of the visitor from the heritage experience, 3D printing allows for a mass produced but personalised experience that increases the subjective authenticity (Torabian and Arai, 2013) of the produced souvenir. This in turn has implications for the notions of authenticity, the associations and connections to souvenirs as physical objects associated with specific places and their functions as memory holders. The findings suggest that the consumer experience with the souvenir could be enhanced through the use of innovative technologies (Neuhofer et al., 2012) but the aspects of cost, feel and look of the final souvenir, in addition to the context were important dimensions in the consideration of value and desirability of the 3D printed souvenir. 3D printed, in situ souvenir production offered the visitors a human – product interaction with an aesthetic experience (Crouch and Desforges, 2003), an emotional experience and an experience of making personal, 'authentic' meaning (Collins-Kreiner and Zins, 2011). The process of in situ 3D printing also expands our consumption of heritage environments as creative (Richards and Wilson, 2006) and performative (Mansfeldt, Vestager, and Iversen, 2008) and multisensory tourism experiences. The successes of the model reflects Desmet and Hekkert (2007 : 57)'s research into products with 'experiential impact' which have 'the capacity to delight our sensory modalities, assign personality and expressive characteristics to a product and, through interaction, the user is able to assess the symbolic and symbolic significance of them.'

Thompson's work (2010 – 2014) amongst an international, socially mediated, community of print maker/practitioners found a general excitement in connection with the opportunities digital technology offers for experimentation, innovation and the dynamism in digital working processes. One respondent summed this up "I am inspired by the many innovative and varied applications of digital media". (Respondent-17 2011). Another respondent responding to questions on the transition from traditional to digital making and the future directions it may take led another respondent to identify that, 'New combinations of tactile and digital means are only just starting. I could imagine projections combined with printed surfaces, digital print installations that are presented simultaneously (collaboratively) in various locations, etc. Trans-global exchanges are beginning also.' (Respondent-12 2011)

Subsequent questions exploring to what extent the respondents got involved in digitally networked collaborations through the internet e.g. Inkteraction, Print Universe, Facebook etc. revealed the use of the internet to collaborate with other makers "in Australia, Brazil, and Cuba after a conference in Cuba with some faculty and advanced students at Woodbury College in Los Angeles and at [the] UNC Charlotte" (Respondent 16 2011). Whilst another respondent said such collaborations through the internet "… raise opportunities, it's a welcome aid for exchanging opinion, getting help on developments, ethical issues and seeing artist's works in divergent countries" (Respondent-9 2011), they went on to state that they "readily support this kind of initiative" (Ibid). Within this context Thompson's work as a mediated maker of print multiples identifies that within his creative domain the sharing of images ideas and techniques reflects a new notion of collaborative practice. In which, as Leggett (2006) identifies, the art activity moves away from geographically installed artefacts towards definable and mobile systems and processes. Consequently, within this expanded, negotiated framework collaboration between maker and audience can become a two way process or conversation as in the expanded "digital author – reader relationships" described by (Skains 2010)

Wee Replicators, a business run by one of the authors, Allan, exhibited at a Mini Maker Fair in Edinburgh on April 10th, 2016. The aim of this was to introduce the company, which provides access to 3D printing, primarily to those aged 6-11.

The space was set up as a mini 3D printing club. There was a 3D printer demonstrating the printing process, samples of things that



Image 3. (2016) Wee Replicators 3D printing club



Image 4. (2016) Child copying the process used by the 3D printer to build a model.

had been 3D printed and three 3D printing pens, each loaded with a different colour of filament. Visitors were encouraged to use the 3D printing pens to personalise basic 3D printed keyrings, which were printed in advance of the faire. A limiting aspect of 3D printers and other fabrication tools, is the time it takes to make an artefact. To produce a CAD file and then to 3D print it would take a considerable amount of time for a beginner. Therefore, to ensure that as many visitors as possible could participate and still have a meaningful experience; the 3D printing pens were used in conjunction with the pre-printed keyrings.

The participants, mainly children, used the pens to melt their designs into the keyring with their chosen colour of filament. The observations were informal, however, it was clear from the number of participants alone that both children and adults were highly engaged with this activity. The adults mainly watched the 3D printer, looked at the 3D printed samples and asked questions. The pens captivated the children. Children as young as three were attempting to manufacture their own keyrings. At times there were long queues but when it grew quieter, several children came back to watch the 3D printer and asked if they could add more to their keyrings with the pens. Interestingly, they tried to build onto their keyrings in the same way as they had just watched the 3D printer building the objects. See Figures 3 and 4.

This understanding of the manufacturing process illustrates the idea that children learn more effectively through their own natural interaction and involvement with activities instead of adult initiated instructional learning. (Eagle, 2012) By using 3D printing pens children of all ages were able to take part and enjoy the activity due to the speed at which it was possible to create something. At the age of three, teaching mathematical concepts such as space, size and speed is difficult, in part due to short attention span. (Rothbart et al., 2001; Calder, 2011) However, the pens proved to be a legitimate and engaging method to teach these ideas. Thus, the potential for digital making as a tool for learning, including early years education is immense and would benefit from more thorough research.

Conclusion

This research has analysed the educational benefits of shared design practices and digital fabrication and shown how they could be unique tools in the hands of progressive educators in the learning spaces of the future. Many of the findings will go on to inform research strategies and initiatives within the new on-campus Fab Lab being set up at Edinburgh Napier University. Digital making in informal learning environments has been shown to be a positive influence on the innovative outcomes of participants. Digital fabrication allows individuals to produce tangible objects on demand, wherever and whenever they need them. Widespread access to these technologies appears to be challenging traditional models for business, foreign aid and education.

The benefits of digital fabrication, particularly 3D printing, is not completely understood by the general public, despite the rise in the widespread popularity of Fab Labs. Commentary and expectations can sometimes be overly positive. Gersheneld (2012 :44) commented that 'glowing articles about 3D printers read like the stories in the 1950s that proclaimed that microwave ovens were the future of cooking. Microwaves are convenient, but they don't replace the rest of the kitchen.' In Posch and Fitzpatrick's research (2012) and Allan's observations from her Wee Replicators clubs, they found that the '3D printed results often could not stand up to the expectations of the children. Considering time and costs involved, we could just print out a small exemplar for each child, all out of the same colour – white plastic. As a consequence, 3D printing seemed to be more interesting for how it works rather than the actual use they could make of it'. (Posch and Fitzpatrick, 2012 : 499) These findings do not preclude open access 3D printers being from being useful tools in intergenerational learning, rather, the processes of 3D printed production can be researched more fully in this context, instead of emphasising the object outcomes, as in Forster et al's souvenir project.

The open-access aspect of Fab Labs, that brings together diverse communities, is also worthy of further investigation. The author/reader/maker relationship is blurred, as shown in Thompson's research, leading to new outcomes and implications for future Higher Education practices. Gershenfeld (2012 : 51) said, 'Fab Labs seek to balance the decentralized enthusiasm of the do-it-yourself maker movement and the mentorship that comes from doing it together. After all, the real strength of a Fab Lab is not technical; it is social. The innovative people that drive a knowledge economy share a common trait : by definition, they are not good at following rules. To be able to invent, people need to question assumptions. They need to study and work in environments where it is safe to do that. Advanced educational and research institutions have room for only a few thousand of those people each. By bringing welcoming environments to innovators wherever they are, this digital revolution will make it possible to harness a larger fraction of the planet's brainpower.'

Emergent research at Edinburgh Napier University is looking at the relationship between the students, business, the public, digital fabrication, 'teacher training', secondary and primary age children's' learning and the relationship with the on campus Fab Lab. Similar studies have had encouraging outcomes with Blikstein concluding that 'digital fabrication and 'making' could be a new and major chapter in this process of bringing powerful ideas, literacies and expressive tools to children'. (2013 : 2) 'Creative prototyping, shared creativity and the supportive underlying infrastructure play an essential role in the motivation of children and novice users'. (Posch et al, 2010 : 257) From research gathered to date, the skills all users may acquire through their interaction with the Fab Lab include team work, research skills, communication skills, design thinking, technical drawing skills, entrepreneurial skills, computer skills, creativity, innovation and cooperative learning, all in a place that is different from formal learning environments.

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Hit and Miss
Innovation and Collaboration in an Academic Setting

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ABSTRACT

'The [collaboration] process itself can be unstable and troublesome' (Dodgson et al, 2015, p.462) How can design courses approach interdisciplinary collaboration effectively?
This paper extracts a few key insights from Mark Dodgson's article on 'Collaboration and Innovation Management' (The Oxford Handbook of Innovation, 2015) which focuses mainly on collaboration in a commercial setting. The paper proposed here identifies empirically the similarities and differences between academic and industrial collaboration through juxtaposing results-driven and process-oriented approaches.
This will be followed by a comparative study of two interdisciplinary student collaboration initiatives in the field of design management. The first example, the so-called 'Entrepreneurs Challenge', which was staged for several consecutive years at the University of Hertfordshire in the UK, will be compared to the teaching of 'Design Business and Innovation', a curriculum component that has been recently introduced at LASALLE College of the Arts in Singapore. Through comparing these two undergraduate teaching and learning initiatives the paper will assess the effectiveness of interdisciplinary collaboration in relation to the teaching of design-business-related skills.

The discussion will concentrate on the following key questions:

1. How do design institutions manage interdisciplinary collaborative processes?
2. How do academic design institutions measure success? How do they manage and counteract failure?
3. Can insights and concepts in the area of design thinking and open innovation help to foster a methodical approach to managing interdisciplinary collaboration in an academic context?

A list of insights will conclude the paper.

keywords

interdisciplinary collaboration, design management, innovation

INTRODUCTION

This paper discusses what we can learn from innovation management and from open innovation principles in order to enhance the effectiveness of interdisciplinary collaboration in design education. The premise is that design teaching and learning is a process, and that this process itself may be in need of innovating, if we seek to teach design students to think beyond individual design disciplines. Marc Dodgson argues that 'Collaboration is the sine qua non of [absolutely essential for] innovation management because innovation invariably involves many and diverse contributors' (Dodgson, 2015, p.462, author's italics). This paper examines this link between innovation and collaboration in pursuit of insights which may improve teaching and learning strategies in the area of interdisciplinary collaboration.

1. Interdisciplinary collaboration in the industry

'Collaboration is defined as the shared commitment of resources to the mutually agreed aims of a number of partners.' (Dodgson, 2015, p.462) Interdisciplinary collaboration in design education can be pursued at various levels: across courses, schools, faculties, or institutions. In principle the difficulties and challenges are largely the same, though they can be experienced at different scales and complexities. The examples examined as part of this paper focus on a particular set of circumstances that is related to the interdisciplinary teaching of design entrepreneurial skills within individual faculties. Teaching design entrepreneurialism and innovation across a variety of courses requires a new methodology as opposed to the intra-disciplinary teaching of design-specialist skills. This paper will examine to what degree insights in the field of innovation can be deployed to organise and manage this departure from traditional design teaching.

Interdisciplinary design teaching and open innovation

Henry Chesborough coined the term 'Open Innovation', and described it as 'a paradigm that assumes that firms can and should use external ideas as well as internal ideas […]' (Chesborough, 2005, p.4). He describes open innovation as a 'business model [that] utilizes both external and internal ideas to create value […]' (Chesborough, 2005, p.4). Of course we do not need a business model to reframe the pedagogy behind design teaching, but we may well benefit from an evaluative model. If we wish to draw from insights in innovation studies in order to enhance the effectiveness of interdisciplinary design teaching and learning activities, then

we may want to see design disciplines, i.e. individual courses, as ideas generating entities who can enhance value creation through interdisciplinary collaboration. How this works is little understood, since the way in which value is generated in an academic context is often not analysed systematically. Instead the value which design courses offer is assessed only indirectly through the marking of works created by students. However, students may generate knowledge that is not manifest in the outcomes of their work. What matters more is the experience that leads to the creation of the knowledge, the interdisciplinary working process. How do we value an experience? Module feedback and student satisfaction surveys help little here, because the questionnaires used are hardly ever specific enough to examine the effectiveness of individual teaching and learning methods in detail.

Interdisciplinary design teaching allows not only for the sharing of subject-specialist design skills, but also of specialism-specific teaching and learning methods. There is a common fear amongst design lecturers that the quality or depth in the subject-specific knowledge that is imparted upon students may be diluted through the introduction of interdisciplinary modules. This often leads to the question if interdisciplinary design teaching compromises the subject-specific skill sets which students can accumulate in the course of their design training. There is interesting analogy between open innovation and interdisciplinary design education. 'In the Open Innovation model […] it is less clear that there will be a return to the firm's investment.' (Chesborough, 2005, p.13) There is a risk element involved, since the benefits of initiatives are not perfectly clear at the outset. As much as firms may worry about the possible lack of returns on investment, design courses may see their curricula compromised if interdisciplinary design teaching fails to produce the expected 'dividends'. Given this anxiety, it is surprising that interdisciplinary design teaching is often approached in a hap hazardous way and without concise methodologies that would allow for systematic process monitoring. Opening courses up towards the cross-disciplinary sharing of teaching and learning methods, much resembles the knowledge sharing in open innovation practice. The question which this paper seeks to resolve, is how we can draw from insights in innovation studies in order to enhance the management of interdisciplinary teaching and learning, and how interdisciplinary teaching and learning can be utilized to introduce novel curriculum contents, such as design entrepreneurialism.

As mentioned above, Chesborough introduces open innovation as a business model. In education we refer to teaching models and frameworks instead. In this study we need to relax the terminological accuracy in order to recontextualise insights gained in the area of innovation. With reference to an older paper which he co-authored with Rosenbloom, Chesborough also states that 'In Open Innovation, the business model is the cognitive device that focuses the evaluation of R&D projects within the firm' (Chesborough, 2005, p.10). If we neglect the term business here, we may speculate that open innovation principles may provide us with models to pursue interdisciplinary collaboration methodically. Interdisciplinary design teaching and learning constitutes a process that needs to be developed, at least for those institutions who are unfamiliar with interdisciplinary design practice. Some institutions will, of course, have encountered multi- or interdisciplinary practice in some shape or form. But the range of known and unknown factors that impact on the effectiveness on relevant processes is considerable, ranging from possible combinations of different design disciplines, to the deployment of resources, time frames, tasks etc. To assess which parametre enhance the quality of teaching and learning and which ones are compromising, insights need to be established through critical reflection, and through the careful examination of processes. This is why the pursuit of interdisciplinary design teaching and learning can, in principle, be perceived as a research and development process.

2. Interdisciplinarity in design education

2.1. Case study 1

The so-called Entrepreneurs Challenge was an interdisciplinary collaborative initiative that was run at the University of Hertfordshire (UH) for a number of consecutive years. It came to an end in 2013. In 2010 it was run as a one-week intensive engagement whilst there were no other teaching and learning commitments for either staff or students. Students worked in interdisciplinary groups of eight. During one year interdisciplinary groups of eight were asked to collaborate of groups of eight at a partner institution in South Africa. Here the team sizes doubled. There were considerations to run the initiative across two weeks instead of one in order to enhance the level of learning. Instead, during its final year, the initiative was run across a whole semester in parallel to subject-specific modules with only a small number of staff involved.

Disciplines included:

- Product Design and Engineering
- Graphic Design and Illustration
- Fashion Design
- Interior Architecture and Design
- Applied Arts

2.2. Case study 2

At LASALLE College of the Arts, the Design Business and Innovation initiative was one of several so-called clusters which the students could choose from. Here students worked in interdisciplinary teams of four. The cluster initiative which was launched in 2016, is part of a greater agenda to introduce interdisciplinarity and to reframe design teaching and learning in a trans-disciplinary way.

Disciplines included:

- Product Design
- Design Communication
- Fashion Design
- Fashion and Media Industries
- Interior Design

2.3. Things which the two initiatives had in common

- A similar number and diversity of disciplines were involved.
- In both institutions there were some differences in terms of and teaching and learning methodologies between the courses involved.
- There were similar limitations in team working experience amongst students.
- The education level was similar:
  Year 2 / Semester 2, BA (Hons) students at UH versus
  Year 3 / Semester 1, BA (Hons) students at LASALLE
- Staff-student contact time was 21 hours at LASALLE, and 15-20 hours at UH
- The cultural backgrounds amongst students were similarly diverse in both institutions, although at LASALLE students were predominantly of South-East Asian background, whereas students at UH were mostly of European or Middle-Eastern background.

2.4. Things in which the two initiatives differed

- Student caliber and commitment. Students at LASALLE appear to be more engaged and self-motivated. This may be due to higher application ratios and due to cultural differences.

- The difference in the working morale between students of different disciplines at LASALLE was noticeably lower than was the discrepancy in the working morale between students of different disciplines at UH. It is worth noting here that the teams at LASALLE were half the size, four students as opposed to 8/16 per team, which made the teams easier to manage.

- Student attendance was monitored diligently at LASALLE, but not at UH.

- At LASALLE lecturers could choose which 'clusters' they taught. At UH there were only minor variations in the teaching and learning contents and lecturers were grouped in teams by management.

- UH management devised a prescriptive work book, that told students what to do each day. Lecturers were only required to provide advisory support. At LASALLE the teams of lecturers were in the position to devise the lesson contents depending on their informed judgement, and they were able to respond to student requests if required. UH was a top-down approach, LASALLE was a bottom-up approach.

- UH was pre-structured, and more results-oriented through handing out the work-book on day one. LASALLE on the other hand was an unstructured open approach, where students were not provided full clarity about what exactly the submission requirements were. These were issued half way through the initiative.

- Due to circumstances many UH lecturers deployed a laissez-faire approach to the teaching, whereas at LASALLE the teaching staff used an action-learning approach.

- At LASALLE students were able to select their preferred cluster, with Design Business and Innovation being one of seven options. This may have benefitted the working morale amongst students. To ensure interdisciplinarity, there was a cap on numbers and students of each of the courses involved were given their preferred cluster allocations on a first-come-first-serve bases. At UH all students had to commit to the Entrepreneurs Challenge with no available alternative.

- At the Design Business and Innovation cluster LASALLE students could choose their team partners following some 'ice-breaker' activities. At UH students were allocated to teams.

2.5. What worked and what did not

The open approach by LASALLE required more careful monitoring and more working effort on behalf of the teaching teams. Informal Q&A was used on occasion to verify how students experienced the learning process, and two formal anonymous surveys were conducted to verify if the teaching and learning activities met the students' expectations. The UH approach felt more mechanical by comparison. Though some groups could be encouraged to perform reasonably well, the commitment of students varied considerably. LASALLE's approach was more flexible by comparison, and also more experimental. Though expectations were not clear at the outset, it was possible to establish those over time through continued exchange amongst staff and students. LASALLE's approach was more process oriented, UH's results-driven.

One of the biggest problems at UH was the fact that throughout the years during which the module had been run (except for the last), the different courses involved, assessed the student performance in different ways. The degree to which the marks would counted to the students' module marks or year marks varied between courses. This re-enforced the difference in the students' commitment to the initiative. Only in the final year, after a dedicated team was put in charge, all students were rated: A) individually, and B) with the same weighting attached towards their module / year marks. At LASALLE the cluster performance was part of a specific module from the outset and the percentage weighting was agreed in advance and in accordance with the time which the initiative consumed. Although some of the students at LASALLE complained about an imbalance in the work commitment between individual group members, here it was the exception, not the rule. At UH the student satisfaction was recorded through informal one-on-one conversations which revealed that most students did recognize the value in the Entrepreneurs Challenge. But their enthusiasm towards it remained within limits. The reason why the initiative was discontinued at UH was supposedly due to reservations amongst staff, who saw the delivery of subject specific core skills compromised when sacrificing one week of a 12-week semester. The semester at LASALLE is 14 weeks which means that the time commitment can be much better compensated for. Here too staff were resistant to the idea initially. However, since they could choose their 'cluster' area depending on their research interest and existing knowledge and experience, working morale was significantly better.

Which of the two initiatives was more successful? As familiar as this question may seem, it is flawed. It cannot be answered without identifying specific criteria for what constitutes success. What can be said is that UH deployed what we may refer to as a closed model that allowed limited adjustments during the course of the teaching and learning activity, whilst LASALLE applied an open approach. The latter made the learning process difficult to predict, but easy to adjust. LASALLE's approach nourished an open mind amongst staff who saw the open approach as an opportunity to pro-actively shape the learning experience through engaging in the management of teaching and learning activities and through the continued production of learning materials. Action learning could be deployed here to enhance the learning experience for the benefit of the students.

If we define one approach as open and the other one as closed, then we can deduct the following characteristics from the above comparison:

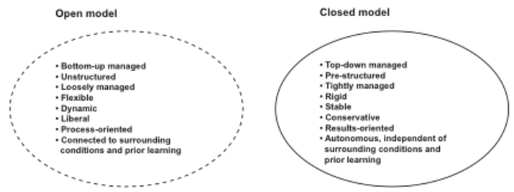


Figure: Sketch outlining characteristics to the open and closed management models for the teaching of interdisciplinary design initiatives

One could argue that the closed model is more resource-efficient, whereas the closed model is more effective with respect to the teaching and learning of methods and processes.

3. What interdisciplinary design teaching can learn from insights in the field of open innovation

Gasmann et al state that 'The variance between a best practice in open innovation and the average is huge' (Gasmann, Enkel, Chesborough, 2010, p.4). Clearly we need to ask ourselves not only if we can adopt open innovation principles for the enhancement of interdisciplinary design education, but also how — Which principles should we adopt, and how do we best apply them? But what exactly have we got to draw from with respect to principles? Gasmann et al admit that 'While the possibilities of opening the innovation process are growing, metric systems are not yet adapted to monitor and measure the value of activities' (Gasmann, Enkel, Chesborough, 2010, p.4). So perhaps it is somewhat forgivable that the vast majority of design institutions are yet to produce a robust framework for managing interdisciplinary design education. Gasmann et al suggest that '… the journey from closed to open innovation involves four main dimensions of the firm's organization, i.e. inter-organizational networks, organizational structures, evaluation processes and knowledge management systems, along which change can be managed and stimulated' (Gasmann, Enkel, Chesborough, 2010, p.5) If Gasman et al are correct, these four pillars need developing to adopt open innovation principles in pursuit of interdisciplinary design teaching. Of course we already have organizational structures, which are usually mapped through projects, modules, courses, schools and / or faculties. We also have inter-organisational networks, although these tend to be mostly informal. In the case of LASALLE the staff-allocation to individual design clusters could be perceived as such an inter-organizational network. Even UH's top-down-managed staff teams can be seen as inter-organisational networks. What is often lacking are adequate evaluation processes and knowledge management systems. Results-driven evaluation processes that focus on the project outcomes are insufficient to measure the effectiveness of the teaching process. Rather than assessing the student work, one would want to directly assess the effectiveness of the teaching and learning processes involved, and ideally one would want to do so through progress monitoring and, importantly, whilst the teaching and learning processes are ongoing. What is often neglected with respect to the teaching and learning processes, is the way in which staff from different disciplines connect with each other. Both LASALLE and UH have deployed some means to assess how students perceived the interdisciplinary learning. However, with the exception of some informal conversations, neither institution paid much attention to the effectiveness of the collaboration within the interdisciplinary staff teams involved. This leads to the second principle that is commonly lacking: Knowledge management systems are commonly limited to internal file-sharing platforms and ad-hoc meetings. Such systems, which are shaped through traditional design teaching and learning, may be highly inadequate for the management of interdisciplinary design education. Knowledge that arises in relation to novel forms of practice is dynamic and in need of regular, if not to say constant monitoring. Monitoring activities should not be limited to the students working efforts, but also cover the actions of teaching teams. Where sets of lesson plans are altered, for instance, one would not want to examine not only the final version. Most telling with respect to knowledge management are the changes that have to be made over time, since these adjustments may highlight trends and allow for the prediction of future needs in the management of what one would consider an evolving curriculum. So there needs to be some form of capturing of the strategic adjustments in the management of teaching and learning activities, and there should be systematic processes of analysis of these adjustments.

4. Design education as a strategic experiment

'A strategic experiment is a risky new venture within an established corporation' (Govindarajan and Trimble, 2004, p.64). If we consider an academic institution to be the established corporation here, then we can identify the introduction of interdisciplinary design teaching and learning as a risky new venture. Some might argue that this is not at all the case, and that interdisciplinary design teaching and learning is easy to come by. As long as the process is not examined rigorously and thoroughly, one can always claim for an interdisciplinary initiative to be successful. But if one does, successes and pitfalls may become evident.

In strategic experiments 'Value propositions are guesses. And activities that lead to profitable outcomes are unclear.' (Govindarajan and Trimble, 2004, p.64). In the light of design education one might want to replace the term profitable with successful. This brings us back to the point made above: How do we define success in design education? To tie it to commercial or financial success is not possible here, or, at least it is not useful. What criteria do we deploy to characterise a successful student experience? Student satisfaction ratings are one measure. But this does not provide insights into the effectiveness of learning, the discovery and retention of new insights. We can rate the design work that is developed in conjunction with an interdisciplinary design teaching initiative. But this would be a results-oriented approach that allows judging the acquisition of skills only indirectly. Instead one would want to focus on the way in which students experience the process of interdisciplinary collaboration, and on the insights gained by students. At UH, students completed a work book, which listed a range of consecutive tasks. The students submitted this book individually after they presented their design propositions in groups in the form of an elevator pitch. Due to the limited time-frame, and due to the prescriptive nature of the work book, there was very limited flexibility for student groups to develop their own working methodology. At LASALLE the situation was quite different. The students were given a range of tools for developing their design proposition, but were free to decide which ones to choose. The open approach applied at LASALLE may have been disorienting for the students initially. But this confusion led to interesting questions. Students had to approach the projects with open minds. The learning process was perhaps less time-efficient. Indeed, it would have been impossible to deploy LASALLE's methodology for a one-week initiative. Trial and error were deliberately part and parcel of the learning process here, in particular with a view on the effectiveness of the interdisciplinary collaboration amongst students.

Govindarajan and Trimble present the 'strategic experiment' as an alternative to the 'scientific experiment'. The latter is characterized through five criteria:

- Results are available quickly.
- Results are unambiguous.
- Experiments can be isolated from outside influences.
- Experiments are inexpensive.
- Experiments are repeatable.

(Govindarajan and Trimble, 2004, p.69)

Most of the criteria can be applied to interdisciplinary design teaching and learning, except one: Results are hardly unambiguous here. One could argue that this depends on how the activities are organized, framed and assessed. However, the values that can be extracted from interdisciplinary collaboration in design are manifold. The stakeholders include students, staff as well as the academic institution who hosts an initiative. Each will benefit from interdisciplinary collaboration in different ways, i.e. extract different kinds of values. Since it interdisciplinary collaboration involves many uncertainties during the early development stages, it is best approached as a strategic experiment rather than a scientific one.

Govindarajan and Trimble argue that 'Planning systems for strategic experiments […] should be designed to explore future strategies by supporting learning, given the unpleasant reality of reliable unpredictability.' (Govindarajan and Trimble, 2004, p.70, authors' italics). Of course the authors are discussing entrepreneurial activities in a commercial corporate context, and the application of the argument to design teaching and learning can be questioned. However, teaching and learning of interdisciplinary design does constitute a paradigm shift for most design institutions. It does so in particular if it is connected to the introduction of new curriculum contents such as design innovation. In both examples examined above we have interdisciplinary collaboration amongst both students and staff combined with new learning contents, which is that of design business and innovation. Due to the number of variables involved the level of unpredictability is high. UH chose to use a closed teaching and learning strategy, LASALLE an open approach. LASALLE's approach embraces unpredictability. But how is the latter best managed?

Govindarajan and Trimble criticize accountability mind-sets in conjunction with strategic experiments. They claim that 'When the future is unknowable, the foremost planning objective must be learning, not accountability.' (Govindarajan and Trimble, 2004, p.70, authors' italics). Note that learning here relates not only to the acquisition of knowledge by students, but the acquisition of pedagogic knowledge through teaching staff and curriculum managers. Whilst LASALLE apply an open approach, their practice does not fall in line with a strategic experiment, since 'Despite reliable unpredictability, predictions must be made.' (Govindarajan and Trimble, 2004, p.70). The authors recommend to focus on 'a small number of critical unknowns', and 'Instead of making specific numerical predictions' they suggest to predict trends (Govindarajan and Trimble, 2004, p.72). 'The rate and direction of a performance measure is usually a more important piece of information than its current value'. But what values can we establish in conjunction with design teaching and learning? Student satisfaction would be one. Competence growth would be another, and insights in relation to methods and processes a third. The difficulty that arises in conjunction with interdisciplinary collaboration is that the achievements are more difficult to measure than in relation to conventional intra-disciplinary design practice. The solutions developed through interdisciplinary collaboration often defy comparison to conventional design solutions. In the field of design business and innovation or design entrepreneurialism, one can judge the originality of the design concept, or its viability. But how to rate the performance of interdisciplinary groups of students, effectiveness of working efforts, team working and problem solving strategies? The difficulty we are having in relation to design practice is that the majority of aspects are not easily quantifiable. Govindarajan and Trimble state that 'plans for strategic experiments should emphasise leading indicators, which provide first clues whether the assumptions in the plan are realistic'.

In conjunction with strategic experiments Govindarajan and Trimble refer to theory-focused planning. They argue that 'Theory-focused planning is appropriate when more is unknown than is known — when an industry is just emerging, no business model is established, and the uncertainties are so large that not even the basic nature of the relationships between activities and outcomes is clear.' (Govindarajan and Trimble, 2004, p.74). Whether or not the principles which Govindarajan and Trimble discuss in relation to entrepreneurship, can be applied to academic curriculum management remains questionable. Introducing fundamentally new subjects, and teaching those in fundamentally new ways, e.g. in an interdisciplinary fashion, produces a large number of unknowns. In design education these unknowns are commonly not managed strategically. No clear hypotheses are agreed and mapped against the teaching and learning experience as the latter unfolds. Instead clarity is pursued through a long process of trial and error which is judged intuitively and inter-subjectively by those involved. If satisfaction is not achieved over prolonged periods of time, initiatives are simply discontinued as in the example of UH. What institutions should do instead, is to identify critical unknowns in relation to novel teaching and learning strategies, and find reliable measures to assess what works and what does not. With reference to industrial contexts Dodgson states that 'Collaborations experience tensions and unplanned disruptions. Some report failure rates of 30-50% on the "bumpy road" of partnerships' (Dodgson et al, 2015, p.470). Perhaps it is a fear of failure that prevents academics to commit to concise reference frameworks when introducing new initiatives. Or academics shy the time and effort required to develop and implement such frameworks.

5. Knowledge brokering

The challenges in relation to interdisciplinary design teaching relate to knowledge management, and, in the case of novel initiatives, to the management of emerging knowledge. Carlos Teixeira from Illinois Institute of Technology provides one example for a robust methodology to 'enable the uncovering of the patterns and rules that regulate effective use of resources to shape design thinking as an organizational competence' (Teixeira, 2015, p.1). He refers to this methodology as 'Knowledge Brokering'. It is aimed at the systematic assessment of 'design thinking' processes. Teixeira devises his methodology as a performance measuring tool for group work in the field of design.

As building blocks of his methodology Teixeira lists:

- Information — The known
- Questions — The 'what if'?
- Insights — The 'AHA moments!'
- Criteria — The mission statement
- Features — Interventions

Teixeira defines precise criteria for the process, the detailed explanation which exceeds the scope of this paper. From these criteria he deducts specific steps which allow for the systematic assessment of the effectiveness of resources, including tangible resources, intangible resources and human resources. The latter comprise facilitators (knowledge broker, knowledge manager, project coordinator) as well as participants.

In relation to the examples discussed earlier, one could consider the implementation of knowledge brokering of the methodology in two ways:

1. To measure solely the performance of interdisciplinary student groups
2. To measure the effectiveness of the teaching and learning activities including actions performed by teaching staff

In the first instance, only the students would be examined in terms of performance, and the questions would focus on their performance and how this can be enhanced. In the second instance lecturers would adopt the roles of knowledge brokers and knowledge managers, which means that insights relate not only to the performance of student groups, but also to the teaching and learning activities used by lecturers to teach students interdisciplinary design practice.

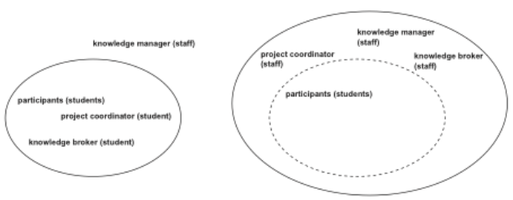


Figure 2. Sketch indicating the possibility of integrating the management of teaching and learning initiatives to the team monitoring process

One point which some design lecturers may find problematic is the quantification of performance measures. In Teixeira's methodology results are expressed through scores from -1 to +1. Score cards help to assess performance against specific criteria such as time, energy, transactions, space. Some might perceive the translation of qualitative values into quantitative data as problematic in the context of design. But quantitative values are the only reliable means to provide results related to teaching and learning processes that are comparable across a variety of teaching teams, and across a number of consecutive teaching and learning initiatives.

Based on successful trials with design incubators, Teixeira's methodology shows that it is in principle possible to devise robust assessment frameworks for the performance of interdisciplinary groups instead of relying on generic and non-specific questions which mentioned in the beginning of this paper. As labour-intense as it may be at the outset, the reliable monitoring of new design teaching and learning initiatives and strategic adjustments in the management of these initiatives are not possible without concise frameworks.

Teixeira explains that 'Because of its potential broad application to a large variety of problems, domains and organizations, design thinking opened up the interest by academics for further and deeper investigations to better understand this capacity and its potential.' (Teixeira, 2015, p.2). Teixeira's methodology is fundamentally aimed at the effective use of resources, including tangible, intangible and human resources to facilitate novel group activities. His approach seeks to convert knowledge into competences (Teixeira, 2015, p.3). Thus the objectives behind his approach address precisely the difficulties discussed above in relation to interdisciplinary design teaching and learning.

Without a robust methodology much of the knowledge and insights that evolve from interdisciplinary design teaching and learning will inevitably remain tacit. Instead of clearly articulating, if not to say measuring, what works and what does not, academics and curriculum managers often rely on a shared feeling in their managerial decision making. Whilst this requires lesser effort than the implementation of a measuring framework, enhancements are often no more than a chance product. The question this paper raises, is if Teixeira's methodology could be adapted to manage strategic experiments, to monitor successes and failures against concise assessment criteria, and therefore enhance the chances for the introduction of new interdisciplinary curriculum components to succeed.

Conclusion

It is not uncommon to ask design students to embrace failure as a possible learning process, as this can stimulate risk taking and it helps to get students to focus on the learning process rather than simply on the outcome. Dodgson states that '… the [collaboration] process itself can be unstable and troublesome' (Dodgson, 2015, p.462). The unsystematic way in which academic institutions often approach interdisciplinary collaboration seems surprising given the high risk of failure involved. But perhaps it is due to people's natural reluctance to confront failure, that curriculum managers refrain from assessing interdisciplinary design teaching and learning through concise performance measures.

This paper has deducted insights from open innovation studies, and hypothetically applied those on to an academic context. Despite the time and resources which it may require, design institutions would be best advised to learn from the modus operandi of industries, since learning through trial and error is not only time-consuming, it can also be costly.

This paper refers to interdisciplinary as opposed to multidisciplinary practice. Julie Thompson Klein explains the differences between both forms of collaboration through characterizing multidisciplinary practice as a form of juxtaposing, sequencing and coordinating knowledge, whilst interdisciplinarity is understood as a form of integrating, linking and blending knowledge (Klein, 2010, p.16). If teaching contents are fundamentally new, existing paradigms of thinking cannot prevail amongst participants. In order to successfully tackle challenges, participants are required to build new knowledge through the integration of ideas, as opposed to simply contributing to design solutions from the perspective of specific disciplinary angles. This is why the two examples above are best categorised as interdisciplinary practices. That said, it is likely that the principles that were discussed in this paper apply to the management of different forms of collaboration, multidisciplinary and transdisciplinary collaboration included. Removing the comfort of traditional learning contents increases the challenge surrounding the management of resources and participating groups of students.



Figure 3. Interdisciplinary collaboration unites participants in that their perspective on the challenge is not dominated by their subject-specific bias towards it. A fundamentally novel task requires a fundamentally new mindset, an integrative approach. In multidisciplinary collaboration participants contribute their existing subject expertise in a combinatory approach.

Seven key insights can be obtained from the case studies:

1. Interdisciplinary collaboration in design education is best pursued through an open bottom-up approach that involves teaching staff in the managerial decision making. This gives teaching staff co-ownership over evolving curricula, and allows them to respond to arising problems more quickly.

2. Keeping teaching teams and student groups small helps to pilot new interdisciplinary initiatives. Teaching methods can be tested on larger groups of students during repeat cycles of teaching and learning activities.

3. Active monitoring and action learning is essential to identify and resolve problems in relation to student performance and student satisfaction early. Bottom-up management requires a supportive and flexible managerial structure.

4. Sharing pedagogical and managerial insights across multiple teaching teams enhances the introspective learning of working processes, and it helps to adhere to principles of equal opportunities amongst students.

5. The introduction of new interdisciplinary teaching and learning initiatives may be best approached as a strategic experiment. Knowledge management methodologies using monitoring protocols can help to mitigate the risk of experiments to fail.

6. Methodical knowledge management is particularly important where various teams of staff work in parallel. Without systematic and regular monitoring, open exploratory approaches to the teaching of interdisciplinary design skills can lead to divergent developments.

7. When deploying interdisciplinary teaching teams, the staff performance should not be neglected. Here knowledge management protocols should ideally cover both student groups and staff teams.

New frameworks are needed to facilitate interdisciplinary collaboration in design education

This study used an empirical comparison-study of two interdisciplinary design teaching initiatives in order to identify challenges. A speculative approach was deployed in order to sketch out possibilities of addressing these challenges. Despite its relatively unusual characteristics, interdisciplinary design teaching is commonly managed in a conventional traditional way. For more effective implementation of interdisciplinary initiatives, it is recommendable to deduct methodologies from design practices in the industry. Their implementation does require extra effort on behalf of the curriculum managers and the teaching staff in the beginning. But it is likely to help to avoid, or at least mitigate, teething problems in pursuit of interdisciplinary teaching and learning initiatives. A more proficient, i.e. methodical approach to interdisciplinary collaboration will not only enhance internal processes and reduce the risk of new initiatives to fail, it will also make it easier to pursue interdisciplinary initiatives in collaboration with industries and across multiple academic institutions.

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The role of design thinking in the transformation of china's banking sector

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ABSTRACT

China's banking sector continues to undergo a significant transformation that began with the global financial crisis in 2008. Facing a range of ever-growing challenges in its transformation, Chinese banks should change their traditional ways and opinions on innovation, and take more creative, proactive and radical approaches to develop more useful, usable and desirable banking services and more distinct, valuable products for customers. To do this, it is proposed to apply design thinking in the transformation of China's banking sector and to expand its role in banks. Specifically, more designers should cooperate with or be employed by banks to achieve ground-breaking innovations. Thus, design schools in China should educate design students with new knowledge, skills sets and understanding of design in financial services.

After the introduction, the paper first presents a brief literature review on design thinking in the banking sector. Secondly, it analyses the main transformation challenges for Chinese banks. Thirdly, it explains the principles and skills of how to use design thinking for Chinese banks through case studies. Finally, it suggests directions for future academic research on design thinking in the Chinese banking sector. This study aims at inspiring bankers, bank managers, policy-makers, financial academics and relevant participants to explore banking with design methods and theories. It also aims at extending the scope of design education in China and encourage more design professionals to focus their attention on the banking sector.

Keywords

design thinking, China's banking sector, transformation

INTRODUCTION

Traditionally, especially in China, it has been the task of the disciplines such as finance, economics, management, marketing etc to explore the transformation of banking. It has been the task of finance schools, business schools and management schools to teach about financial knowledge. However, design thinking as a methodology for innovation has recently been injected into curricula of some business schools, and a few design schools have introduced courses, workshops and projects about the innovation of financial services in some countries (Korn and Silverman, 2012). Today, design thinking tends to be recognized as a core competence of organizations (Martin,2009; Kolko, 2015), and an increasing number of financial institutions integrate it into business.

It is well known that Xiaoping Deng who was the famous politician and great nation leader in China is internationally considered as the general designer of China's reform and opening up to the outside world. With regard to banking reform in China, Deng (1979) advocated that Chinese banks ought to be the real financial institutions, which pointed out the developing direction of Chinese banking in the following decades. Since the outbreak of the global financial crisis in 2008, China's banking sector has been undergoing a new transformation. In this transformation, there are a range of ever-growing challenges for Chinese banks. For example, the fierce competition with emerging players, the changes in customer financial needs and behaviors, the unbalanced supply of banking services and products, the big enterprise disease in Chinese banks and so on. Nevertheless, the traditional strategies can not ensure banks address the new challenges successfully, the incremental improvement is difficult for banks to maintain the competitive advantage in current financial market, and the technology-driven innovation is insufficient for banks to satisfy customer needs. Therefore, Chinese banks should change their traditional ways and opinions on innovation, and take more creative, proactive and radical approaches to develop more useful, usable and desirable banking services and more distinct, valuable products for customers. To do this, it is proposed to apply design thinking in the transformation of China's banking sector and to expand its role in banks.

The paper first presents a brief literature review on design thinking in the banking sector after the introduction, and next analyses the main transformation challenges for Chinese banks. Then it explains the principles and skills of how to use design thinking for Chinese banks through case studies. Finally, it suggests directions for future academic research on design thinking in the Chinese banking sector. This study aims at inspiring bankers, bank

managers, policy-makers, financial academics and relevant participants to explore banking with design methods and theories. It also aims at extending the scope of design education in China and encourage more design professionals to focus their attention on the banking sector.

Literature review

Simon (1969) advocated "everyone designs who devises courses of action aimed at changing existing situations into preferred ones," which expanded the meanings of design and designer. Buchanan (1992) made a seminal exploration of design thinking in the article "Wicked Problems in Design Thinking", in which he proposed applying design to address complex challenges. As a leading proponent of design thinking, Brown (2008) stated that design thinking is a discipline that uses the designer's sensibility and methods to solve difficult problems, thinking like a designer can transform the way you develop products, services, processes, and even strategy. Nooyi (2015) reported that design leads to innovation and innovation demands design, who successfully turned design thinking into strategy for PepsiCo's transformation. Design, or more specifically design thinking, has attracted attention among business managers and many types of organizations (Junginger and Faust, 2016).

The banking sector is witnessing a tremendous shift in the various factors, banks need to rethink and renovate their working models such as operational model, distributional model, execution model, and innovate in terms of service, product, channel, operation and Human resources management (Kamath, 2012). In the book Breaking banks: the innovators, rogues, and strategists rebooting banking, King (2014) concluded that the banking industry is not known for radical innovation, but in an age when radical innovation is the new normal, banks will have to learn to keep up. He listed a lot of innovations for banking in the book which were about taking different approaches and thinking outside the box. Moed (2011) found that the traditional role of banks was to provide services and enforce terms and conditions, not to worry about customer satisfaction and experience, but currently a growing number of international banks are recognizing good design as a critical element to their banking products and services, and they help customers better spend, budget, save and invest based on the principles of design thinking. Oliverira and Hippel (2009) argued that users as service innovators can be integrated in the development of banking services. Ahmad et al. (2010) investigated the relationship between service quality and customer satisfaction in the banking sector, and stressed that banks need to meet customers' expectations for long term benefits. Clatworthy (2011) noted that there is considerable potential to innovate through careful consideration of touchpoints in banking services from service design thinking. Gor and Aspinall (2015) insisted that accessible banking with well-designed experience is the future direction. They further pointed out that innovations are welcome, but need proper user studies among varied demographics before mass deployment. Currently, an increasing number of academics study banking transformation by the way of "thinking like a designer". It is clear that design thinking has changed the approach of innovation in the banking sector, which challenges the traditional management process and business strategy (e.g., Brown, 2009; Moed, 2011; Kolko, 2015).

Of course, design thinking has been spread and used in the banking sector partly due to the practices of the advanced design firms such as Allen International, Continuum, Livework, Transformator, Enginegroup etc. Among them, IDEO has made a great success, and becomes one of leaders in design thinking. In the past decade, it helped many banks seize opportunities to innovate, such as BBVA, GE money bank, Wells Fargo, 1st source bank etc. In the book Change by design: how design thinking transforms organizations and inspires innovation, Brown (2009) took Bank of America as an example to explain how to use design thinking to create radical innovation. In this example, Bank of America worked with IDEO to design a new savings account service dubbed “Keep the Change” through customer insights, multidisciplinary team, and rapid concept prototyping in 2005. Additional, Brown and Martin (2015) described the innovations of Intercorp Group which used design thinking to create excellent banking services and customer experiences in the article "Design for action". Benefiting from the efforts of design firms, design thinking has played a important role in the transformation of banking sector.

In China, design thinking is a new term, and many educators, researchers, managers etc lack a full understanding of it. Not surprisingly, most Chinese banks are unfamiliar with it. However, design really plays a wider role in China's banking transformation, and many design companies are asked to create new solutions for Chinese banks, which enhances the awareness of design-driven innovation in the banking sector. Today, when the global advanced banks and Internet financial firms integrate design thinking into business, Chinese banks must learn to keep up.

Challenges for banks in China

Throughout the history of Chinese banking sector after the founding of the People's Republic of China in 1949, it can be divided into three important periods (Li, 2008; Liu, 2009). The first period was from 1949 to 1978, characterized by the planned financial system within the planned economy system. During this period, the degree of economic monetization was very low and financial instruments was lack seriously, banks did not play their real roles. The turning point of Chinese banking development was the Third Plenary Session of Eleventh Central Committee held in 1978. Subsequently, it was the second period from 1979 to 2008. In this period, banks all over the country witnessed a revolutionary advance. As a result, China built a diversified, multi-level and modern banking system adapted to the country’s economic growth. The outbreak of the global financial crisis in 2008 forced the international banking sector to enter a new historical stage. Influenced by it, China's banking sector continues to undergo a significant transformation, and enters the third period from 2009 up to now. During the present period, the main challenges are as follows:

The fierce competition with emerging players in the banking sector

Under the more relaxed government policies in China, a growing number of emerging players such as Internet firms, investment institutions and finance technology companies have been permitted to enter the banking sector. The new players from other industries provide low-threshold, fast and convenient banking services through digital technologies and innovative approaches, which breaks the limitations of traditional banking. For example, there are about 270 licensed companies in China's third-party payment market according to the reports of the People's Bank of China (the Central Bank in China). Among them, Alipay of Alibaba and Tenpay of Tencent are the two most popular payment platforms in China, which enables customers to pay for anything at anywhere and anytime by a smart phone or computer. Additionally, China has set up five fully private banks in 2015 on a trial basis before the practice is extended to more places.

Moreover, many small and midsize banks and foreign banks entering China see the transformation as a crucial opportunity to stand out in the banking sector. Therefore, they develop new services and products more boldly, actively and openly because of their efficient management and agile response, which challenges the large banks and further intensifies the banking competition. Among them, Guangfa Bank, China Merchants Bank, China Citic Bank and China Minsheng Bank have made a great success. It is apparent that banks face unprecedented competition in China, and their old business models seem to lose the competitive advantages in current financial market.

The changes in customer financial needs and behaviors

In China, the living standard of people has a dramatic improvement in the past decades. As a result, customer financial needs have an explosive growth, such as housing loan, auto loan, education loan, transaction payments, personal investment, and wealth management. What is more, the financial needs tend to be more diversified and personalized. However, the existing provision of banking services and products can't fully meet customer needs. And many deficiencies of traditional banking were exposed gradually, which challenges the patience and persistence of customers. For example, the low service efficiency in bank branches, the constrain of service time, homogeneous services and products among banks. In fact, the contradiction between the rising of financial needs and the relatively lagging of banking services supply is still the basic contradiction of China’s banking sector (Liu, 2009).

In addition, the digital finance develops rapidly in recent years, resulting in the changing of customer financial behaviors in China (Xu et al., 2014). One marked change is that an increasing number of customers, especially the younger generation embrace online financial services and products provided by the non-banking finance institutes, and their reliance and loyalty on banks are decreasing. Moreover, customer preferences and expectations are changing, and they desire more convenient, distinct, efficient, transparent and timely financial services, which requires Chinese banks to innovate more customer-centric business models.

The unbalanced supply of banking services and products

The physical branches are still the main channel of banking in China. At present, it is estimated that more than two hundred thousand branches are in operation across the country (Zhou, 2013), which mainly distribute in the cities and developed regions. While in countryside and underdeveloped areas, the branches are extremely lacking. Although Chinese banks strive to develop online channel, most customers in countryside and underdeveloped areas are still difficult to access the digital finance, because the rate of Internet penetration in the areas is very low. In addition, some customer groups such as the old, disabled, less-educated are not adaptive to online channel because of their conservative financial habits.

More seriously, banks always classify clients by asset size and provide differentiated services and products for different type of customers to achieve maximum economic benefits. As a result, the rich can enjoy the priority of services in branches, but the ordinary customers can not. Accordingly, the urgent task for Chinese banks is to eliminate the unbalanced supply, and launch an inclusive, wide coverage of banking, in order to make every customer equally obtain the financial services and products.

The big enterprise disease in Chinese banks

China's banking sector has achieved a remarkable development in the past decades, but most banks are still regulated and led by government. As a result, they have the classic characteristics of government agencies, such as strict hierarchy, bureaucratic management, high operation cost and bloated organizational structure. The fact is that Chinese banks are not fully market-oriented. For customers, the banking relationships are generally characterized by a lack of equality, transparency and trust.

In this immature banking system, most staff in banks lack sufficient impetus to create new solutions and ideas. The leaders are fearful of failure and very cautious in decision-making, especially support incremental improvement rather than radical innovation. Almost everyone in banks considers more personal promotion, not the advancement of the banks. And the driving forces of banking development always come from the reform, intervention of government. It is commonly regarded as the big enterprise disease in Chinese banks. In this situation, the key challenge for Chinese banks is to build a new bank culture for innovation.

How to apply design thinking for Chinese banks

Facing the transformation of banking sector and a range of ever-growing challenges, the key to success for Chinese banks in the years ahead will be innovation (Xu et al., 2014). It is wise to embrace design thinking and embed it into every aspect of banking, in order to transform successfully and become the most competitive financial institutions. Here are some principles and tips:

Focus more on customer experience not just the money

King (2013) stated that banking is no longer somewhere you go, it’s something you do. He further interpreted, a customer’s assessment of a service provider in the banking sector will be how simply and easily customers can access banking when they need it, and how much they trust the partner or service provider to execute. From this perspective, Chinese banks must stick to customer-centric design, and create better experiences across different touchpoints during the customer journey. For example, a more enjoyable waiting experience in branches, a inclusive banking service for different customers, the interaction between customers and staff in a more collaborative and fluid way, self-services with safe experience through ATM, smart phone and computer.

To do so, it is considerable potential to innovate through deep

customer insights, which will enable banks to better understand the financial behaviors, habits and lifestyle of target customers. By this empathic approach, the Internet company Tencent in China has successfully developed a new service named "virtual red packets" through WeChat which is a social media platform. This popular service is rooted in the traditional habit that people in China celebrating festival and special occasions is to give red packets containing some money as gifts to family members and friends. When customers use it, they first should link bank accounts to the APP, and then send the virtual red packets to other users. Like a game, it encourages more people to join in with a memorable experience because their family members and friends are using it, which is helpful to build a stronger connection between each other.

The case proves that giving great consideration to customer expectations and experiences not just the money is vital to success, because money is merely a means to an end for everyone (Moed, 2011). So, Chinese banks are required to develop more useful, usable and desirable banking services and products tailored to different customer categories.

Collaborate across disciplines inside and outside of banks

It is crucial for Chinese banks to recognize that better solutions always comes from the close collaboration among different disciplines such as marketing, design, engineering and finance. What is more, each discipline must overcome these gaps and respects, appreciates the perspective of the others during all phases of innovation process (Cagan and Vogel, 2002). Certainly, it is necessary to involve designers, engineers, managers, customers and staff in a innovation team of banks, which helps to explore more ideas and create excellent solutions. To be sure, some advanced banks such as BBVA have benefited from open-minded collaboration.

In China, some banks have begun to establish their own innovation centers with interdisciplinary teams, and designers increasingly have been employed by banks. For example, the Bank of Communications (BOCOM) that is one of the top five commercial banks in China, built an innovation center in 2008 to explore new business models of banking. In recent years, BOCOM focuses on the digital finance and community banking. It successfully

developed the Intelligence Teller Machine (ITM) that is a new self-service equipment with more functions and better user experience than ATM in 2012, through closely cooperating with technology, design and consulting companies. In addition, it has launched a "branch of the future" concept store, which uses the latest technology, zoning and engaging service points to connect customer experiences physical and digital through the integrative innovation across different departments and teams.

With the continuous development of society and technology, the boundary of banks and other social organizations tend to be more and more fuzzy, the interpenetration and integration will be frequent. Banks should learn to invite, engage and enable stakeholders and innovators from different disciplines and industries like never before to co-develop, co-design and co-produce.

Quick iterate through rapid prototyping

It is demonstrated that the process of design innovation is not linear, but iterative. Especially, in design thinkers' opinion, no matter how challenging the constrains of a given problem, at least one potential solution is better than the existing alternatives (Brown, 2008). Accordingly, banking services and products can be always better designed with endless rounds of trial and error. For banks in China, there are several principles to succeed. First, bankers should be agile, optimistic enough to the changes of society, economy and technology, and immediately identify new opportunities for banking innovation. Second, the innovation team should quickly respond to the opportunities and propose creative solutions through iterative cycles of prototyping, in order to turn ideas into actual banking services and products which can be implemented.

For Chinese banks, rapid prototyping is a important element of design thinking, which is the best way to visualization of ideas. It can help the innovation teams of banks change the traditional way of expression of ideas through words and statistic diagrams influenced by management consulting companies, and communicate visually and tangibly. While in the iterations, prototypes can be sketch, visual story, rough physical mock-up and even video. The objective of rapid prototyping is to make intangible to tangible, which stimulates team members in banks working efficiently and interestingly, evokes valuable feedbacks from the banking stakeholders.

Create a design-centric culture in banks

Building a design-minded organization goes well beyond the design itself, and the successful, innovative organizations of the future will be those that make the best use of the principles and methods of design thinking (Lockwood, 2009; Starostka, 2014). A design-centric culture transcends design as a role, imparting a set of principles to all people who help bring ideas to life (Kolko, 2015). For Chinese banks, it is the key to create a design-centric culture based on deep understanding of design thinking, which ignites creativity and collaboration. This bank culture is open, transparent, attractive, equal and responsible, which motivates bank staff to break the routine in innovative approaches, tolerate more failure and make faster decision.

Not surprisingly, there are impediments to embedding design thinking into Chinese banks. For example, professional gaps, administrative intervenes and institutional obstacle. So, to make design has a voice in bank's important decisions, it is advised to set up a position called Chief Design Officer (CDO) in banks, as Jonathan Lve in Apple and Mauro Porcini in Pepsi. Additionally, banks should establish their own design center, build a creative management team, and launch a customer-centered innovation process. In fact, a common discipline of design thinking is changing our culture, not only in its external manifestations but in its internal character (Buchanan, 1992). Thus, it is a strategic move for banks to create a design-centric culture, which is a recipe for long-term sustainability, not shot-term survival.

Promote the integration of financial education and design education

Design is the core of all professional training (Simon, 1969). Today, it is necessary for Chinese banks to integrate design thinking into professional training for managers, policy-makers and staff. To do so, banks should provide engaging and open learning programs to enhance the awareness of design. For example, inviting design educators to teach about design methods, co-creation workshops with design firms, participation in the projects of design schools. In fact, the financial innovators require not only a wide knowledge of finance, economics, management and marketing, but also a comprehensive understanding of design thinking. Moreover, banks need a wider range of Human resources, which means that employees in banks should be not only from finance schools and business schools, but also from design schools. It is clear that more financial innovators as design thinkers are needed in banks and non-banking finance institutes.

In response to this trend, financial education in Chinese universities should be open to design and inject design thinking into curricula. Meanwhile, more designers should be employed by or cooperate with banks. Consequently, design schools in China should extend its scope to financial innovation, and educate students with new knowledge, skills sets and understanding of design in financial services. As a experiment, we have integrated design topics about financial innovation in some courses for senior students of industrial design major from 2014. It teaches about how to use design thinking to innovate banking services and products in China, which encourages more students to focus their attention on the banking sector and work for banks after graduation.

Conclusion

Applying design thinking in China's banking sector is an important practice that drives banks to deal with the challenges and achieve successful transformation with design approaches. Design thinking will be a core competence of banks in China, and we believe that more and more bankers will transform banking as great design thinkers.

This paper has revealed the role of design thinking in Chinese banking transformation, and proposed some principles and skills of how to use it. However, this is just a start to explore banking transformation in China. Future researches should continue to advance the role of design thinking in banks, focus on the difference of design between banking and other industries, and comparative study of design thinking between the Chinese banking sector and the foreign banking sector. Moreover, it needs more studies and practices in the education of financial innovation based on design thinking.

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Participation and collaboration in open design education

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ABSTRACT

Over the past fifteen years, the roles of the designer, client and end 'user' have changed. Participatory design is about involving the people who will be affected by design outcomes in the design process from start to finish. Co-design, or co-creation, describes a process by which collective creativity is leveraged to arrive at design solutions. Now, a more ecological, networked approach is emerging. Designers no longer see themselves at the top or centre of the creative process, but at the edge of complex, adaptive systems in which diverse participants interact with constantly changing ideas, events and forces (Slavin, 2016).

In this paper, I explore how design education is changing in keeping with this current shift in design practice by focusing on strategic approaches that are transferrable to any area of Design. I begin by reviewing the development of Massive Open Online Courses (MOOCs). I then examine specific open, online design courses that leverage networks to enable global collaborations (iversity's Design 1o1, +Acumen and IDEO.org's Design Kit). I follow this with a discussion the #LibraryFutures project, in which I used social media to crowd source open resources for a Design for Innovation course. I conclude by suggesting how Design education could be further opened up and connected in keeping with a world that is more complex, integrated and co-dependent.

Keywords
open design, open education, MOOCs

INTRODUCTION

Open design, as a philosophy and a practice, is closely related to open education and a pedagogy that values a distributed, non-hierarchical approach to learning and to cultural and material production. Like open education, open design is enabled by, but not entirely dependent on, digital technologies and networks. If something can be digitized then it can be copied, revised and remixed easily (although not always legally), and it can be shared and downloaded at a negligible cost. When an artifact is digitized, it crossed the threshold between the physical and digital environments. It leaves a world of scarcity, where things are, by nature, in limited supply, and it enters a world of plenty, where supply can easily satisfy demand. It exchanges solidity for malleability, and monetary value for social value. It leaves the financial economy and enters the gift economy. Increasingly, artifacts are born digital, so their connection to a world where things are tangible, fixed and limited exists only to the extent that we accept an imposed artificial scarcity and forms of ownership and control that are designed to limit possibilities and maximize profits.

Visual and linguistic metaphors that help us to understand and work with unfamiliar concepts, services and artifacts can also limit our ability to see the potential that digital technology affords. As Bolter and Grusin explained in Remediation: Understanding New Media (1999), new media remediates the older media that it simulates and replaces. We are encouraged to see the content of the message, but not the technology that is used to frame and (re)present it. This makes it easier to take in the content, but harder for us to focus on the medium and the technology behind it. If an eBook on an eReader is designed to mimic the look and feel of a physical book, we are more likely to be able to interact with and use it quickly and easily, due to our previous experience with physical books. However, the book metaphor makes it much more difficult for us to imagine alternative ways that texts could be created, published, used and shared. An eBook is an example of a digital artifact that exhibits some of the advantages of digital media (search, changeable type size and style, weightlessness) while retaining many of the limitations of its physical counterpart (single author, fixed, linear text, copy protection).

Wikipedia, by contrast, is a different kind of text that is enabled by a different kind of authorship and production model. It serves as an example of what a text can be in a digital, networked environment — collaboratively authored and edited, easily revised and updated, and free to access and use. Wikipedia was launched in 2001 and by September 2015 it had grown to over 41 million articles in 294 languages created by about 70,000 active contributors (2016n). The English Wikipedia is comprised of more than five million pages, which, if printed in 2015, would have filled 2,317 700-page volumes. Although it is written by mostly anonymous, unpaid volunteers, it has earned a reputation as a very popular and useful reference resource. Numerous studies have shown that, as a source of information, Wikipedia is as least as reliable as the best printed resources that have been written by paid experts and published by established publishers working with traditional business models (2016k). In addition, unlike the printed equivalents, errors and omissions that are discovered in Wikipedia can be quickly corrected. It is a living, constantly changing knowledge base that, like most of the open web, is free to access and open to improvement by anyone with an Internet connection.
We are used to thinking about design outcomes like we think about books and other forms of communication in the industrial mode of production — as the final result of a costly process to produce a limited number of artifacts that have been designed by an expert. We are beginning to see how the practice of design is changing as a consequence of the same enabling technologies that have altered the publishing landscape. It is not surprising that publishing, an industry that relies on the creation and exchange of information, was one of the first to be disrupted by new communications technologies. Education, and especially formal, public education, has been slower to change, perhaps due to the protected and regulated nature of the sector. However, developments over the last several years, especially the introduction of popular, open access post-secondary courses, provide examples of how it could be transformed in the near future. Design disciplines are in an excellent position to show the way with innovative new approaches, because of the importance of technology and the focus on technological change that is central to Design and design education.

Open courses (MOOCS)

Dave Cormier coined the term MOOC (Massive Open Online Course) to describe an online course that he taught through the University of Manitoba with George Siemens and Stephen Downes in 2008 (Gillis, 2010). In keeping with the topic of the course, which dealt with learning in the age of digital networks, they decided to open the for-credit course to non-paying participants who were able to view the course content and interact with other participants, but not have their work assessed for credit.
To their astonishment, with only one invitation shared over email, over 2,300 individuals registered for the course as interest-only 'students' (Downes, 2011). Cormier explains that the aim of the course, "Connectivism and Connective Knowledge" (or #CCK08 as it was known on social media), was to enable individuals to construct their own learning networks around shared interests and, as a result, to build "a distributed knowledge base on the Net" (Cormier, 2012).

This first MOOC, and those that followed a similar pedagogy, are sometimes referred to as cMOOCs, a reference to "connectivism," a theory of learning that Siemens proposed in 2004. He argued that, in an age in which individuals and information are increasingly connected through digital networks, learning is about making meaningful connections between people and between "specialized information sets" (Siemens, 2005). Similarly, Stephen Downes explains that "knowledge is distributed across a network of connections" and "learning consists of the ability to construct and traverse those networks" (Downes, 2007). This approach encourages learner autonomy in "a community of practitioners, where people practice the discipline, rather than merely just talk about it" (Downes, 2010). Central to this is the willingness of experts and novices alike to practice and think about their discipline in the open, using public blogs, social networks and a variety of channels and platforms. In addition, there is an expectation is that participants will share their work using a Creative Commons or other open license, enabling others to reuse, remix and repurpose their work without having to seek permission.

Although 2,300 students might seem like a massive number of students for any course, it was the venture capital funded, private platform MOOCs that followed four years later that attracted serious numbers and equally serious attention from the popular media and from established post-secondary institutions. When Sebastian Thrun and Peter Norvig's experimental open, non-credit course in Artificial Intelligence attracted 160,000 registrations from 190 countries in 2011, Thrun decided to leave Stanford University and start his own business (2011). He launched Udacity.com in February 2012, offering free, open access courses focusing on science and technology topics (Thrun, 2012). By 2016, Udacity had shifted from offering free university level courses for anyone to teaching "the skills that industry employers need today" in partnership with technology industry giants like Google, AT&T and Facebook. The job-focused platform now offers a mix of 'Nanodegree' programs, credentials, and a face-to-face 'Udacity Connect' packages for varying one-off and monthly prices.

In April 2012, two of Thrun's former colleagues from Stanford, Andrew Ng and Daphne Koller, launched Coursera with US$16 million in venture capital funding. Beginning with partnerships with six elite universities, they offered free online courses through a strategy and platform that they predicted would change the face of higher education globally (2012). By 2016, Coursera had attracted 21 million registered users from around the world and had offered more than 1,400 courses in partnership with 145 universities. In addition to offering courses entirely for free and certificates of completion for a nominal cost, Coursera for Business was launched in August 2016 to provide workplace-based training for employers (Levin, 2016). Like Udacity, Coursera is trying different strategies as it searches for a sustainable business model.

The third of the original large-scale MOOC platforms that launched in 2012, edX, differs from Udacity and Coursera in that it was funded by its founders, Harvard University and MIT. It is also the only major MOOC provider that is nonprofit and open source. It was formed with the aim of creating "a new online-learning experience" and to "research how students learn and how technology can transform learning – both on-campus and worldwide" (2013). In October 2014, edX was offering over 300 courses through 54 member institutions and had awarded over 100,000 certificates to their online students (2014b). By 2016 it had developed over 90 partnerships with universities and other institutions. As well as continuing to offer free online courses, it released Open edX, an open source version of its MOOC platform that is available for free for anyone who wants to build their own large-scale online courses (2016a).

After the entry of Udacity, Coursera and edX in 2012, other MOOC platforms soon launched in other countries, including Open-

2Study (Australia), FutureLearn (UK), OpenupEd (pan-European) and iversity (based in Berlin). All take advantage of the Internet to offer online courses to large numbers of students who are able to register for free. For a small cost, a certificate, badge other form of recognition provides evidence that a student has completed a course. In most cases, the company retains copyright over online lectures and other resources, which are available only to registered participants, and only while the course is being offered. This has led David Wiley, a leading proponent of open education, to argue that, for most of the popular, large scale MOOCs, "open education means "open entry to fully copyrighted courses with draconian terms of use"". To be truly open, he advocates for the use of a license that allows for the 5Rs: Retain, Reuse, Revise, Remix, and Redistribute. He also believes that, if we were to take the open approach seriously, we would need to build an open education infrastructure that included competencies, assessments and credentials, as well as resources (Wiley, 2014). Components of what could be assembled into an open education infrastructure can be found in in many existing open access courses and platforms. These include iversity's 'Design 1o1' and +Acumen and IDEO.org's 'Design Kit'.

Iversity's design 101

Iversity is a MOOC platform that began offering online courses in October 2013, a year and a half after the first, larger private MOOC providers, Udacity, Coursera, and EdX, were launched. Although not the first, or the largest of the MOOC companies, iversity was the first European provider and it has a distinctive European flavor and focus. It describes itself as "Europe's digital learning platform for higher education and professional development" that aims to "make education more accessible, more affordable and more personalized". Like the other platforms, the stated objective of iversity is to make it possible for "thousands of students from all walks of life" to come together "to learn with, and from, each other, on a digital campus" through the use of short videos, animations, interactive simulations, quizzes, and peer to peer feedback, (2016h). By September 2016, it listed 32 European partner institutions and had offered over 60 courses in English, German and other languages to over 1 million participants from around the world (2016i). Like Udacity, Coursera and edX, iversity is a live experiment in how a business model can be developed around the delivery of courses that most people take for free. On June 9, 2016, the managing directors of iversity filed for insolvency after a major shareholder refused to provide necessary bridge financing. Two months later, a new investor, Holtzbrinck Digital, stepped in, with the understanding that the company would focus more on business-to-business courses and "work closely with corporate clients to develop customised solutions meeting specific customer-needs". However, they will continue to explore "how an academic course offering can be made sustainable", beginning with a collaboration with Springer Nature with the aim of offering fee-based courses and degrees for academic credit (2016g).

Iversity has offered several free, not for credit, open access design courses over the past few years. The design and presentation of these courses is creative and engaging, with a sense of fun and playfulness. The personalities of the instructors features more than is the case with MOOCs from the other large platforms, which often follow a very similar template-based approach consisting of a series of short pre-recorded video lectures interspersed with short quizzes. A forum specific to the course allows participant to engage with one another and, to a lesser extent, with the instructor. These forums are not public, and they are normally closed after the course has finished. Iversity's design courses are more experimental and make much greater use of social media to engage with the wider design network beyond the course.

Design 1o1 (or Design Basics) is an online course from iversity that began in October 2013 and lasted for 101 days. It was coordinated by a team led by Stefano Mirti and Anne-Sophie Gauvin and was based at the Abadir Fine Arts Academy in Catania (Sicily) as part of a international avant-garde program focused on online education. Participants were invited to "Learn by doing and transform your everyday life into 101 projects". The stated purpose of the course was "to create a design community". Over 40,000 students enrolled, 10,025 started the course, 629 completed, 350 earned a certificate, and 300 submitted work for the final show in Berlin, which 100 of the participants attended. Design 1o1 is described as a "modular machine" in which iteration and learning by doing is important. The overriding aim is "to have fun and share our process" through the ongoing communication of design ideas and projects that "encourage conversation, and thus, generate a community" (2016m). As the course coordinators explain, the pedagogical approach is informed by the way in which digital networks have changed design:

We live in a global community where the physical bits are slowly (and not so slowly) overlapped by social media. Design has become #design. Indeed, the use of new technologies has changed the teaching and, by the same token, the nature of the past; the past is being renewed. Herein lies the conceptual hinge of Design 1o1: a new way to learn a new design. (2014a)

The course was delivered through 101 daily emails that included an animated postcard announcing the brief and a design activity that would take between 15 minutes and one hour to complete. Every Monday, the plan for the week ahead was sent to participants, along with a short quiz. Each week of the 14-week event dealt with a different design theme. These included self-representation, storytelling, domestic interiors, public space, dress, etc. The course ended with a three-day online festival and a public display of the work completed by the participants. The instructors made extensive use of a sites outside the iversity platform that included a website with links to course news, prompts and submissions on Pinterest, YouTube, Instagram, Facebook, Facebook Groups, and Twitter (2016d). The Design 1o1 Pinterest site contains 44 Boards and over 2,000 Pins and, like the 116 animated postcards uploaded to the YouTube site and the 2,280 images on Instagram, they remain accessible today. In September 2016, the public Facebook page, 'Design 1o1', had 8,904 likes, and the Facebook Group, 'Design 101 Arena', had 5,463 members. Along with the Twitter account, both remain active with frequent posts, as they are being used to support a follow-on course, 'Zine 101', which started on September 5 2016. 'Storytelling 1o1' is scheduled to begin on October 5 2016. In this way, the coordinators are continuing to build on the community that developed around Design 1o1.

The objectives of Design 1o1 included helping participants to understand "Who shares your visions and ideas (who could collaborate with you in the future)" and "How a community works: its behavior and potential" (2014a). The use of social networks to share and discuss work in public underlines the importance that the coordinator, Stefano Mirti, placed on the community component. He also understands the importance of physical gatherings. Workshops and a public exhibition at the end of the course were opportunities for participants and instructors to meet face-to-face. However, most of the communication and engagement around projects happened online. As the course website explains, for designers, "our main problem lies in finding new ways (and tools) to transfer knowledge". "What happens when new "social" tools and media are used within a classroom?", they ask. "We believe it requires the classroom to be transformed into a community" (2016m). This is in keeping with the philosophy of the connectivist MOOCs, which provide prompts rather than answers, and encourage participants to navigate through a sometimes overwhelming network of resources, participants and projects that are spread across multiple sites and platforms. The Design 1o1 course serves as an invitation to build a personal learning network while contributing to the development of a global knowledge network. In the process, personal relationships are formed, and collaborative structures are fostered. As Dave Cormier likes to say, "the community is the curriculum" (Cormier, 2008).

+Acumen and IDEO.org's Design Kit

Acuman is a Not-for-Profit company founded by Jacqueline Novogratz in 2001. Its mission is to "change the way the world tackles poverty by investing in companies, leaders, and ideas". It raises charitable donations to invest in companies, leaders and ideas that are focused on assisting disadvantaged communities. The company reports that, by combining aid, charity and markets, it has worked with 92 companies, invested $101 million to support innovations, and created or supported 58,000 jobs. Donations have enabled it to set up volunteer chapters around the world, develop over 300 partnerships with individuals, corporations and foundations, and to offer free courses that provide an

introduction to Acumen's values, principles and approach to leadership (2016b). The courses are offered through +Acumen, a name that indicates the goal of "adding Acumen" to the lives of people who want to be part of a growing network of 250,000 community members and social change leaders. Unlike iversity, Coursera, edX and the other large MOOC platforms, +Acumen's offerings are focused on supporting the company's leadership development program. In September 2016, 22 courses were listed on their website, each relating to one of three areas of the Acumen Leadership Model — Moral Imagination, Financial Skills, or Operational Skills. 'Design Kit: The Course For Human-Centered Design', which fits in the Operational Skills category, is offered in partnership with IDEO.org (2016c).

Created by the global design consultancy, IDEO, in 2011, IDEO.org is a non-profit company of "mission-driven designers" who use human-centered design principles and practices to have a positive impact in the lives of the poor. As their website states:

The problems of poverty are immense, systemic, and complex, but we believe that a design-led approach, the right partnerships, and sustained engagement with a particular problem can create transformative change (2016f).

They point out that human-centered design "sits at the intersection of empathy and creativity" and that they are working with the social sector to encourage them take a human-centered approach to problem solving.

The Design Kit it is a collection of resources created by IDEO.org that includes a website, a Field Guide to Human-Centered Design, a smaller Pocket Guide to Human Centered Design, a facilitators guide, and books on the design thinking and the creative process. They are products of collaborative engagements between designers and the people and the communities they have worked with, and they are intended to increase the understanding and the reach of human-centered design methods and applications. The Field Guide was funded by a Kickstarter campaign launched by IDEO.org on November 8, 2014. They hoped to raise US$30,000 to expand the existing HCD Toolkit, which had been downloaded 141,000 times, into a comprehensive illustrated book. Within a month, 1,354 backers had pledged US$84,232 (2015b). The 192-page, full-color Field Guide was published in 2015 and is available for sale as a hard cover book and as a free download. The use of a Creative Commons CC BY-NC-ND (attribution, non-commercial, no derivatives) license means that it can be copied and distributed for free. The Field Guide includes 57 design methods and case studies showing how human-centered design is practiced in the field (2015a).

Design Kit: The Course for Human-Centered Design is a free, seven-week online course that +Acumen and IDEO.org have been offering together since 2013 (this discussion refers to the course that was offered from September 6, 2016). It provides students with "hands-on experience speaking to, prototyping for, and testing solutions with the people you're designing for" (+Acumen, 2016). Unlike most online courses, students work in design teams of 2-6 students that meet physically in their local community while also engaging with other teams and their work online. The design teams choose to work on one of three pre-crafted challenges that are provided by the course, or they can develop their own challenge. For each weekly 'class', the design teams are provided with Readings, a Case Study, Methods in Action, and a Workshop Guide. The course requires about 5 hours of work each week, and participants who complete all of the assignments receive a certificate of completion signed by IDO.org and +Acumen.

A 'Getting Started Guide' lists the benefits of doing the course, which include learning how to effectively engage your community, developing solutions suited to individual challenges, improving collaboration, developing creative confidence, and having fun. The guide explains that Human-Centered Design is sometimes referred to as "design thinking", and that they should be considered to be the same thing. They acknowledge that the stages used to describe the three stages of the design process — Inspiration, Ideation, and Implementation — might differ from how they are described by the Stanford d.school and others, but that they all emphasize the same basic approach that involves getting out into the community, prototyping rapidly, and then iterating until an appropriate solution is found (2016e). A separate Team Formation Toolkit is provided at the start of the course to help with the formation and functioning of the design teams. "Learning is better with others", it begins, and it explains how teamwork requires paying attention to leadership, scheduling, and preparation. It also

underlines the importance of co-creating the learning experience: “Successful teams realize that real learning comes from meaningful interactions based on trust, respect and accountability. Set ground rules for successful collaboration” (2016l).

The Design Kit course uses the Novoed learning platform, which, according to the company, “replicates the experience of great in-person learning online, making it possible to teach soft skills at scale” (2016j). The Course Management System (CMS) is well organized and easy to navigate, but the ability to replicate person-to-person communication and to teach soft skills is hindered by the formal, rigid interface that is sealed off from the open web. Although a live feed of all Twitter posts containing the #Acumen-HCD hashtag is displayed at the bottom of the Novoed Home screen, it provides only a limited window to the online world outside the CMS. Similarly, forum posts within the Novoed platform are only visible to people who have registered for the course. Although this has the advantage of focusing discussion and eliminating distracting messages and content, it also limits the serendipitous discoveries and connections that are possible when content and comments are public and spread out over several different sites and platforms, as is the case with iversity’s Design 1o1 course.

#LibraryFutures

In a world where technology changes faster than traditional educational institutions and courses can keep up, social learning online is one way of tapping into current knowledge held by individuals who might not be geographically near (Ferguson and Buckingham Shum, 2012). It can also be a fast and efficient way of accessing expertise that might be held by individuals within a company or institution who can be difficult to access physically, especially at short notice. The #LibraryFutures project was an experiment that I initiated in the use of social media, predominantly Twitter, to access expertise beyond the classroom relating to the future of libraries. 35 students in a 13-week, place-based, 300-level Design for Innovation course taught in 2014 worked in groups to explore the current state of, and possible future uses for, the central library at the university in which they were students. The clients for the project, a small team of senior librarians and managers, provided an overview of the changing use patterns of the facility and outlined plans to replace physical books and journals with digital resources. The students and instructors found what relevant resources they could, but they realized that experts within and beyond the campus held information and experience that would be difficult to find or too recent to have been published. We decided to reach out to the experts through social media. We chose a descriptive hashtag for the project, #LibraryFutures, because we wanted to attract attention to the problem (or opportunity) we were dealing with, rather than to the course itself. We were not trying to open up the course to everyone; rather, we wanted to tap into what others out there knew, and what resources and case studies they were aware of. We hoped that, by sharing what we were finding and doing with others, they would be willing to share what they had found and had done with us. We were not collaborating on the same project, but cooperating over shared interests.

According to Martin Weller, digital networks and social media have enabled three levels of lightweight sharing. Content creation, like recording and uploading a video to YouTube or writing a blog post, can be time consuming, but is much easier and faster than it used to be with analog media. Quick sharing refers to simpler acts, like uploading existing digital content or adding a link. Frictionless sharing, the fastest and easiest of the three, is a simple byproduct of normal everyday activity that could be something as minimal as writing a short comment or marking content as public (Weller, 2011). For experienced users, Twitter is an almost frictionless medium. Writing a twitter message and including a link to a website or video takes very little time. Responding to, or ReTweeting, a message that appears in your timeline takes almost no effort. This worked to our advantage with the #LibraryFutures project.

I used my personal Twitter account for the project, as I already had over 3,000 followers and was following more than 4,000 accounts. I began sharing messages about the project with requests for resources and case studies. A librarian on campus, who is particularly active on Twitter, quickly picked up the hashtag and engaged in a discussion about the project, tagging her library colleagues in her posts. Within the first week, a handful of librarians and their contacts shared links to several books and journal articles that were covered by a Creative Commons license, so they could be downloaded and used in the course immediately. Everything we collected through Twitter was shared back out, and the students soon started documenting and publishing their work on Twitter, Instagram, Facebook and other platforms and channels, using the #LibraryFutures hashtag. A Swedish academic with expertise in serendipity, an architect in the South of England who was designing a community library, and a librarian in Ontario with and interest in entrepreneurship were three of the many who discovered us and our project through the hashtag (as well as exchanging resources these three also offered to Skype into the class to talk to the students). A selection of the posts carrying the #LibraryFutures hashtag from Twitter, Instagram and Facebook were regularly saved in a Storify archive (McGuire, 2014). Each week, the class began with a review of the most recent messages that had been added to the Storify, and, since the posts within the archive are live, we could play the videos and follow the links directly. By the end of the course, the archive consisted of 250 selected messages, and the Storify had attracted more than 1,600 views. By September 2016, that number had increased to more than 2,300.

Collaboration and Cooperation

In an article titled ‘Design as Participation’, Kevin Slavin traces our changing ideas regarding the role of the designer and the ‘user’ for whom he or she is assumed to be designing. He asks how design processes and outcomes would be different if designers designed for participants, rather than for users. Furthermore, he comments that the new generation of designers has learned to work with “complex adaptive systems” and do not think of themselves as designers in the way that designers used to. They are much more humble now.

The designers of complex adaptive systems are not strictly designing systems themselves. They are hinting those systems towards anticipated outcomes, from an array of existing interrelated systems. These are designers that do not understand themselves to be in the center of the system. Rather, they understand themselves to be participants, shaping the systems that interact with other forces, ideas, events and other designers (Slavin, 2016).

In order to navigate effectively in a world comprised of complex systems and difficult problems, we will need to learn how to organize ourselves in ways that make the most of what each of us see, know, and are able to do. We can do this by collaborating on shared projects, using technologies and strategies that enable us to work effectively in groups to arrive at considered, peer reviewed, outcomes. We can also do this by cooperating over networks that emerge out of shared interests and develop through the sharing, exchanging, and remixing of the best information, resources, and ideas.

Conclusion

We have developed technologies that allow us to see the world in something approximating its actual, humbling complexity. As our ability to model and simulate our environment improves, our understanding of the interrelated nature of things increases. All problems are wicked problems, but we have learned to oversimplify them so that we could arrive at a designed intervention that we believed could offer a definitive solution — at least for a time. We are beginning to realize that there are no firm, fixed problems, but situations, relationships and environments that are in constant flux. Our ability to influence, if not actually shape, our immeasurably complex world depends on the extent to which we are able to organize ourselves into a into collaborative communities and cooperative networks of designers and design educators.

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Wealth from waste: a transdisciplinary approach to design education

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ABSTRACT

Design academics, students and industry experts collaboratively participated in designing an on-site system of organic waste management (food waste) at the University of Technology Sydney (UTS). With feedback from stakeholders in government, industry and facilities management, the principles of systems thinking and methods of service design were applied to a live transdisciplinary project with students across disciplines of visual communication, industrial design, fashion and textiles. The proposed model of design education required students to engage in three phases of transdisciplinary practice: 1. Problem formation, 2. Co-creation of knowledge and 3. Implementation and evaluation of the end product in an intensive two-week teaching period with students primed to understand the approach as problem-focused. This consisted of an evolving, emergent methodology, which was highly collaborative in nature. By presenting the complexities and evaluation of this model, we argue for the development of educational structures, methods and practices to support students in:

- Identifying their values and perceptions of the situation by positioning themselves within the bounded system of organics waste management at UTS through reflective self-auditing tasks;

- Reflecting on the intertwined nature of social and technical systems through stakeholder mapping and collaboratively defined systems of service provision; and

- Articulating how knowledge across disciplinary perspectives might be integrated into team processes through group charters and final design outputs.

The model presented here is a first iteration of an ideal educational scenario, charting the overall developmental phases of the programme to illuminate challenges and opportunities for formulating and negotiating design problems in transdisciplinary teams co-producing design interventions.

Keywords

transdisciplinary, sustainability, organic waste

INTRODUCTION

This paper presents the experience of design academics, third year design students and industry experts participating in a transdisciplinary design studio. The focus of the studio was to design a more sustainable system of organic waste management (food waste) on-campus at the University of Technology Sydney. With feedback and interaction with stakeholders from government, industry and facilities management personnel, students applied principles of systems thinking and methods of service design to a live transdisciplinary project. Throughout the two-week intensive lab, students (across disciplines of visual communication, industrial design, fashion and textiles) collaboratively worked toward redesigning an organic waste system to process 100% of the food waste on-campus for productive reuse in the Sydney precinct.

Aims and Objectives

The project had two key aims, firstly to become an exemplar for how food waste management might be separated and recycled on-site for use as a soil conditioner in the Sydney precinct. For students, this required understanding the current system of food waste management and how 22 staff and student kitchens, 11 cafes and source separating garbage bins accommodating the equivalent of 34,000 full time students act as collection sites for food waste. Working with infrastructure experts, facilities managers, researchers and their teachers, students proposed design interventions so that campus food waste could be processed on-site creating a nitrogen rich soil perfect for use in parks and gardens. Students in this studio worked in collaborative teams to design systems to support the social and technical change required to successfully separate food waste on-site (e.g. source separating bins) as well as educate (e.g. Signage, manuals) users and support staff, speculate and envision alternative systems.

Secondly, the project aimed to trial and evaluate a 'transdisciplinary model' of design education in which the educators required students to engage in three phases of transdisciplinary practice: 1. Problem formation, 2. Co-creation of knowledge and 3. Implementation and evaluation of the end product, all occurring within an intensive two-week teaching period. In defining

transdisciplinarity, students were primed to understand the approach as problem focused, consisting of an evolving, emergent methodology and being highly collaborative in nature (Carew et al., 2010; Fam et al, 2016).

The Transdisciplinary Approach in Design Education

Transdisciplinary forms of collaboration were posed in this studio (and in this paper) as key to addressing the highly complex sustainability problem of organic waste management, which by its very nature is embedded across societal domains (industry, government and community), involving a range of actors (cleaners, café staff, students) all with differing perspectives, norms, and values. In an attempt to support the identification and negotiation of these contrasting perspectives, a series of skills development classes were presented by the educators, including an introduction to systems thinking, boundary setting and stakeholder mapping to encourage students to consider the intertwined nature of systems and the relationship between actors, institutions, infrastructure and social/cultural values.

While transdisciplinarity has a long history of academic discourse, a universally accepted definition for transdisciplinarity is still not available (Jahn et al, 2012). Consequently, quality standards that equally guide researchers, educators and project managers are widely lacking. In an attempt to develop a transdisciplinary design program, the authors adopted Jahn et al's (2012) 'ideal transdisciplinary process', which seeks common ground in transdisciplinarity discourse and identifies overarching features of a shared framework of transdisciplinarity. The three phases and key characteristics of a transdisciplinary process offered include:

1. Problem Formulation

This phase involves orienting oneself to the problem at hand and framing the societal problem by understanding the relationship the societal problem has to scientific and design knowledge. During this phase the problem is collectively identified with input from key stakeholders within the system of inquiry.

This phase required students to decide upon effective communication paths for collective, team based problem solving and broadly research the problem of 'organic waste management'. This was done through personal waste auditing, a self-directed literature review and through interactive engagement with an expert panel of key stakeholders. Exercises to facilitate problem formulation included systems diagrams, stakeholder maps, where students identified, described, set boundaries and agreed on their research focus in working teams.

2. Co-Production of Knowledge

Phase two requires clarification of the roles of designers and stakeholders and the development of a collective learning processes. Stakeholders are defined as not only representatives of particular interests but also as key experts with relevant insights into the problem situation. This clarification was a prerequisite for the successful integration of design and societal knowledge over the course of the project.

In co-producing knowledge students participated in a soft systems mapping exercise (Cheackland, 2006, decided on and mapped the key stakeholders in their defined system of intervention, and shared knowledge in their teams, writing group charters to guide their collaborative design processes.

3. Integration and Assessment of Results

The final phase focuses on the joint assessment of the design results with the 'expert stakeholders' involved throughout the process. Justification of the integration of results is explored in this phase. Action, reflection, feedback and reiteration are encouraged through an iterative action research approach. In the final phase students justified their final designs in relation to the methodological approach taken and the final conceptualization of a design intervention in organic waste management. While students were unable to implement their design in the short timeframe of the design lab, students needed to justify a pathway for implementing the design, the keys actors involved and the market potential to a panel of experts from industry and government.

Building on the work of design theorists working in the area of sustainability (Fry 2013; Tonkinwise 2014; Irwin 2015), we argue that design has a key role to play in facilitating transitions to more sustainable systems of service provision. Applying an understanding of the interconnectedness of technical, social, economic, political and natural systems to address complex sustainability problems is critical and has explicitly been incorporated into the design of this project.

While the role of design in societal change has historically been viewed as part of the centralised management of problems and solutions, Irwin (2015: 7) indicates 'a new transdisciplinary body of knowledge related to the dynamics of change within complex systems is emerging that challenges these assumptions and has the potential to inform new approaches to design and problem solving.' This centrality of transdisciplinary knowledge challenges the familiar disciplinary divisions in design education and foregrounds the need for project-based opportunities that call for collaborative engagement. One of the most valuable aspects of participating in transdisciplinary work is the shift in disposition that it potentially brings about. Through transdisciplinary projects students gain a perspective on the complexity of systems (such as organic waste) within which they are personally implicated. In order to respond to the challenge of designing for system change, students participate in intensive and collaborative knowledge generation, which to some extent refuses disciplinary conformity. Whilst it can't be claimed that this experience alone can shift a design mindset, particularly when the reinforcement of disciplinary thinking is such a structural feature of design education, it can certainly expose students to what is at stake in bringing about transitions to more sustainable cultures and economies.

Method and Process

This paper presents primary research collected over a three-week period during and after the transdisciplinary studio. Primary data was analysed to explore how transdisciplinary practices supported students in collaborative research projects. **Interviews** were conducted with students mid-project to understand how students planned to integrate knowledge across disciplinary perspectives within their teams. **Group charters** collaboratively developed by students to set their own guidelines for collaborative research were used to compare what students said they would do (in group charters) and the perceived challenges of working collaboratively (discussed in interviews). **Reflection on class discussions** on collaborative exercises i.e. 'jointly designed systems diagrams' were a useful tool for encouraging students to let go of team ownership and embrace collectively developed outcomes. **Individual Blog Posts** submitted at a class wordpress site acted as research portfolios, where literature reviews on organic waste management, personal waste audits and self-reflection on the process were open to class discussion. The final data sources were **Student Presentations** themselves, which provided insight into whether students worked toward a collective output with student and expert panellists providing feedback validating the research findings.

Results and Discussion

In this section we discuss the date collected at the three stages of the transdisciplinary approach as evidence to support the argument for the development of collaborative structures, crossing disciplinary divides, and centering education on practice-based, transdisciplinary forms of problem solving.

Problem Formation

During this phase, of all the design and research exercises students undertook, the personal waste audit (an individual reflective process that was assessed) was observed to be the most useful in applying the transdisciplinary approach to a design studio.

The personal waste audit was completed in preparation for class and documented on a class blog (https://wealthforwaste.wordpress.com/tag/blog-post-c/). Amongst more conventional audits, students were given Lucas Ilheins' environmental audit as an example of environmental auditing conducted in a designerly way (reference- MCA Ali). Students were encouraged to use their design skills in drawing, photography and infographics, to personalise the systems thinking required of them. What was important here was that through this exercise, each student positioned themselves as part of the system before the class began. In other words, students approached the problem as part of the problem from the outset. The brief invited students to use their own daily practices to think about the actual definition of organic waste. They were also asked to consider their households, campus and workplace to set the boundaries of the organic waste system from their perspective. This meant that different disciplinary and cultural perspectives were opened up with the very first task. For instance, many students raised their reliance on externally designed systems in their limited student housing options. Others, who lived with their parents, talked about the difficulty in making inter-generational challenges to long-running household systems. International students talked about how many see themselves as only temporarily part of local systems in Sydney, as they are usually on three-year visas. They raised the issue that even if they contribute to more sustainable organic waste systems while at university, they are unlikely to transfer those approaches to their very different lifestyles in their home countries (see Figure 2 for examples of student waste audits). [1]

Students also learned from each other's experiences in this exercise. One fashion student considered the calico used in their toiles as organic waste and documented the discarded fabric. Another student commented that they sew calico every day but had not considered the offcuts as organic waste until reading her peer's blog post. As the orientation phase of of this class required students to research and define organic waste from their own perspective, when students arrived at class they were already engaged in a process of co-producing knowledge through shared insights and learning.

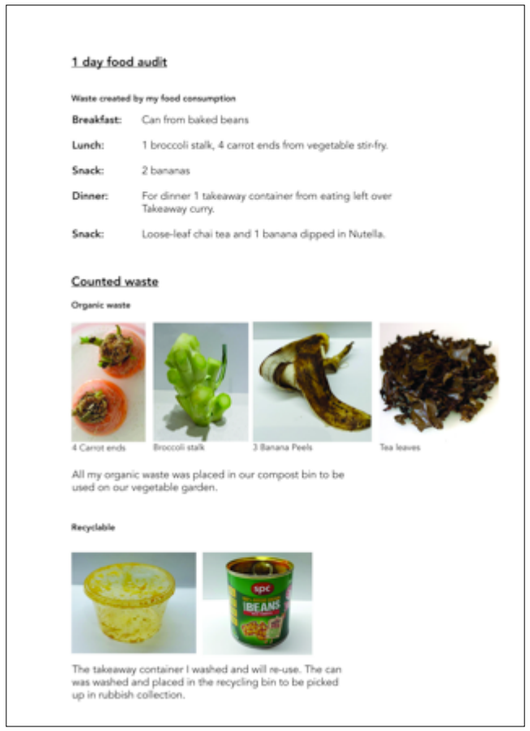


Figure 1. Student Waste Audit, submitted for assessment and publicly available at https://wealthforwaste.wordpress.com/2016/06/13/blog-post-a-talking-about-bananas/

[1] All examples are available online here https://wealthforwaste.wordpress.com/

Co-production of Knowledge

Through interviews, observation and written student feedback the process that most resonated through the second phase of the transdisciplinary process was the soft systems diagramming exercise. Student feedback noted the process helped them better understand the integration of different disciplinary perspectives and the intertwined components of systems to be considered in deliberately trying to facilitate system change.

A system diagramming exercise was conducted with students whereby 6 groups of 5 students worked together to document a complex system. Each group began the exercise by with large sheets of paper, labelled with one of the following system: time, space, plastic, sewage, food, paper. Each group had a different set of coloured pens, which they held throughout the exercise. During each round, groups had ten minutes to map a proposed theme at their table according to a set of questions, before moving to the next table. Themes included: technology and infrastructure, people, values and culture, resources, practices and policies. Over one hour, each group contributed to map each system, focusing on a different component of the system. The end result was a collaborative visualisation of six complex systems, each of which had direct and indirect relationships to organic waste. The visualisations, shown in the figure below, are difficult to read for an outsider. For participants however they document a transdisciplinary thinking process the authors deemed necessary for understanding the complex relationship between the themes. They were also a way of sharing insights across a collaborative mapping process.

	Systems for mapping exercise					
	Time	Paper	Sewage	Food	Plastic	Space
Systems Components: Infrastructure						
Policies						
People						
Value & Culture						
Resources						
Practices						

Table 2. Scope of mapping exercise adopted to facilitate collaborative research and systems thinking

One student commented in the Student Feedback Survey that this process was 'Amazing! ... All the in class learning diagrams we did were so helpful! I will even use them in the future'. Another, when asked in an interview about doing soft systems thinking for the first time in their design degree, commented that 'I love it! I learn well and analyse things well working that way and I need to incorporate that into my [work in] fashion. Great way to come up with ideas and solve problems'. Another said: 'Its a good way to take stock of the possibilities'.

Other students commented: I like that you're thinking about everything at once, the stakeholders rather than just the design first and how the design will impact people'. As with the personal waste audit, others pointed to the way design skills could feed into this process: 'I like that you can visualize, its not a word document, it's a map of everything integrated, it forces you to think of it all at the same time'.

Implementation: justification of transdisciplinary design interventions

The final stage of the project required students to present and justify their design intervention for managing organic waste on-campus to a panel of experts from industry and government in an interactive feedback session. While students were unable to implement their final design within a short 2-week intensive design lab, this phase of the transdisciplinary process focused on encouraging students to justify the methodological approach, perceived market and impact of their design on the current system of organic waste management. This required students explain how the development and engagement with social data informed their research and the final design intervention.

As the design brief was student driven (as opposed to a preconceived brief) students took the lead in the process of identifying and justifying key issues in the project prior to posing a design argument. The were therefore tasked with posing and framing questions when the normative mode in education and professional practice is to respond to design briefs within determined parameters. As Wood (2010) reflects, " …designers are underestimated because they are often asked to solve problems at too late a stage, or at a level that is too brief and superficial. On the other hand, the narrowness of their basic education does not adequately prepare them for a higher level of engagement." This design lab aimed to provide students with the experience and skills to identify, justify and advocate for the design intervention they perceived most critical for managing organics from their own cultural and disciplinary perspectives.

For instance, a team consisting of international students identified the critical need to engage Asian students unfamiliar with the concept of 'organic waste management' in managing their waste differently. The final design was a 'phone app' informing students of the benefit and value of recycling organics and incentives from local on-campus business. 'It will serve as an all-in-one hub for all utilities for UTS students and staff by combining social media, timetable and booking system, interactive maps, integrating with an organic waste management education system that will start educating users with an implemented reward system to encourage recycling and separation at its source'.

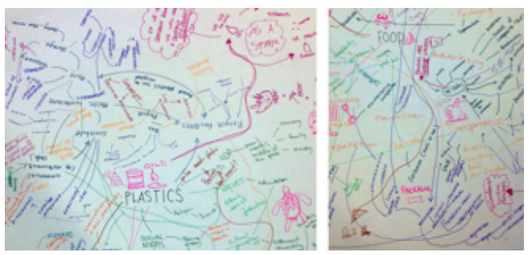


Figure 3: Soft systems diagrams generated by the entire class around themes of plastics and food and time.

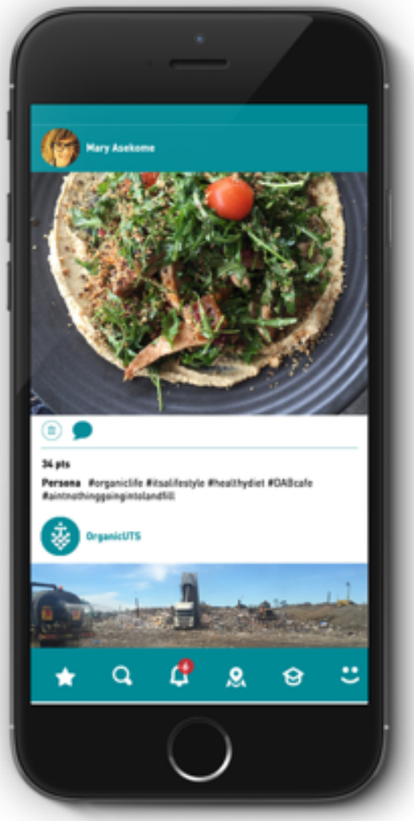


Image 4. All-in-one Hub application for students

Conclusion

This paper focuses on a single design studio as an experiment in applying transdisciplinary approach to design education. While limited in scope, it opens up a range of important questions for design education:

- What roles can designers play in developing transdisciplinary approaches to sustainable systems?
- How can students be supported in understanding and practicing these roles?
- How can they be supported in transitioning their own practices to accommodate a transdisciplinary perspective?

By presenting the complexities and evaluation of this model of design education, this paper argues for the development of collaborative structures, crossing disciplinary divides, and centering education on practice-based, transdisciplinary forms of problem solving. It forms part of ongoing research towards developing design and designers as core partners to transdisciplinary work. The model presented here is a first iteration of an ideal educational scenario. It charts overall developmental phases of a program to illuminate practices required by students to effectively formulate and negotiate problems, co-produce knowledge and evaluate success in transdisciplinary projects (Jahn et al 2012). In doing so, it aims to significantly rephrase design practice, exposing a deeper range of roles for designers as intrinsic to an understanding of transdisciplinary methods, tools and practices.

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CoLAB – collaborative exhibition as a method to open interior design

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ABSTRACT

The importance of employability in higher education led leaders on an interior design degree to introduce an innovative module that embedded the notions of collaborative working. This paper presents the analysis of three different iterations of the collaborative exhibition module in a post-1992 UK University. The module was designed to provide students with the opportunity to work and engage with their discipline beyond the studio environment. Using data from a digital questionnaire, interviews and the module evaluation, the paper explores the student experiences of the module as a form of independent learning, the challenges they encountered and its relevance to the wider employability agenda. We present these findings under three themes: (1) the importance of employability; (2) the 'challenges of collaboration' and (3) 'time for reflection and autonomy'. The paper concludes by emphasizing the value of this mode of study for producing deep and autonomous learning.

Keywords

beyond the studio, collaboration, peer learning

INTRODUCTION

Employability has been high on the higher education agenda for the past decade in the UK and many universities have developed employability strategies, which are embedding elements into the design of their courses. Smith, Clegg, Lawrence and Todd (2007) report on the pedagogical benefits of providing opportunities for work-related learning where students can reflect upon real world work experience. The UK Higher Education Academy (HEA) and the Higher Education Council for England (HEFCE) have been at the forefront of supporting British universities to design the curriculum with an employability focus. The literature in this area is developing rapidly but there is a paucity of research within the field of Interior Design.

The "Collaborative Exhibition" project reported on in this paper has been the output of a second year Interior Design BA (Hons) module in a modern UK university. The project was designed to provide the students with the opportunity to develop as a reflective practitioner and progress an understanding of different professional contexts in which they may work and enhance their ability to contribute to them. By working with a range of external 'experts' (who offered a research topic or design brief) the project aimed to engage the public and the student designers together with complex research and societal issues.

The paper starts with a brief review of the literature, concentrating on theory to practice links. We then outline the context for the study and explore the pedagogical intentions of the modules' designers. The methodological approach outlines and our findings are discussed. We conclude with a brief discussion on the effectiveness of the approach and challenges for students of moving between different forms of knowledge.

Context

As the leaders of the "Collaborative Exhibition" project, we designed the learning outcomes of the module with a key focus on the need for the learners to develop an interdisciplinary and collaborative approach to their learning. We were especially concerned with providing opportunities for the transfer of learning from the University environmnet into the workplace environment, and then to incorporate that learning back into the students' learning.

Mestre (2002:3) has described the transfer of learning as "the ability to apply knowledge and procedures learnt from one context to new contexts". Within the module under discussion here, that transfer of learning is described as "far transfer" by Mestre – that is "the ability to use what was learned from one setting to a different one as well as the ability to solve novel problems that share a common structure with the knowledge initially acquired" (Mestre, 2002-3). In order to best facilitate this transfer of learning; the module also drew upon an experiential learning approach. Boud notes that "Learning builds on and flows from experience: no matter what external prompts to learning there might be – teachers, materials, interesting opportunities – learning can only occur if the experience of the learner is engaged" (Boud, 1993:8).

Interdisciplinary Working

The experience for these learners came in the from of the collaborative working practice which required an interdisciplinary and experiential outlook which, within design research and practice, is recognised within the literature as opening up a designer to a range of ideas and knowledge (Svensson, 2003), the importance of these fuzzy boundaries and the 'unknowing' – being open to letting go of 'what we know' is core to being interdisciplinary (Svensson, 2003). This way of working across and between disciplines is an 'arts endeavor', the coming together of scientific research and practice based 'arts' practitioners (Leach, 2005). This approach is becoming more commonplace within research outputs from research councils (e.g. The Welcome Trust and ESRC/AHRC). The module we developed drew heavily upon these ideas of supporting students to develop the skills and attributes connected to developing an interdsiciplinary outlook.

Collaboration

An additional guiding theme of the module was to expose the students to opportunities and challenges of working in a collaborative environment. Teaching the tools to support collaborative working practices is important within design education (Tovey, 2015) and these are ever more at the forefront of key transferrable skills needed by students. Risk taking is also essential to innovation: Young people entering work in the twenty-first century need to take risks in order to develop a range of appropriate design solutions to a given problem, as well as addressing everyday challenges (Andriopoulos and Lowe, 2000).

In summary, this project was developed with two underpinning themes. It was designed to replicate the scenario of a collaborative arts endeavor, as working alongside industry professionals like this, students were challenged to apply their spatial design knowledge in a creative yet practical way, and using a range of design and fabrication techniques. Students were encouraged to be experimental in their approach, take risks through the development and creation of their ideas and to work effectively within their teams managing their own project delivery with their client. This method of working and project delivery helped students to develop key skill sets of negotiation, timekeeping, problem solving and the sharing of information and ideas that will contribute to student employability and 'graduateness'. Although students were supported in the project through a series of workshops and tutorials, tutors were aware that the scope of the project required students to cope with a higher level of uncertainty and self-direction than in a more formal studio project setting.

Study Methodology

Module Background

The study of the Collaborative Practice module took place in a post-1992 UK University. This module is a 30-credit compulsory 2nd year module, studied over one semester. The module learning outcomes state that students will employ skills of critical awareness, evaluation and self-appraisal to reflect upon their design practice and that of others, producing work that demonstrates and communicates an appreciation of its social, cultural and economic value.

Students are expected to devote approximatly 25 hours of class-based and self-managed time per week to the module. The module permits students to engage with a range of external clients who provide a live client brief. Students are provided with client project titles and then work in groups to determine how the project brief will be met and delivered. The students are required to meet on a regular basis (at least once a week) with the module tutors who provide feedback and support where this is required. The module used blogs to communicate and reflect this was help to develop their understanding of a wide range of professional contexts and will enhance their ability to contribute to them. The assessment of the module was undertaken using both self-assessment and peer assessment with staff acting as moderators.

Study Design

This project has been running for the last three years in different iterations. In 2016 students 85 students from levels 4 and 5 worked together over a 3-week period. This paper takes a review of the experiences over the three year period. The student numbers involved over the 3-year period being studied were:

2013/14	41 students	12 experts
2014/15	45 students	16 experts
2015/16	85 students	12 experts

The study undertaken was qualitative, small-scale and exploratory. It attempted to understand how the students involved with the project developed a better understanding of working with a 'live' project with external stakeholders. The key research questions we were concerned with were:

1. What were the experiences and perceptions of the students who took part in the 'collaborative exhibition' design project?
2. What were the student's perceptions and experiences of working with external stakeholders?

To support answering these questions the study design involved three main points of data collection:

1. A digital questionnaire sent to all student, expert and staff participants from the 2015/16-exhibition project. 19 responses (July 2016).
2. One-to-one semi-structured interviews. The sample included 4 students & 1 expert from the 2015/16 & 2013/14 exhibitions (May 2016).

3. In addition to the interviews, the author's analysed the student feedback on the module over a three-year period from the module evaluation forms. The sample included 158 student responses (evaluations took place during the module – when exhibition had not taken place).

The sample is, as far as possible, representative of the larger student group in terms of age, gender and level of study.

Data

Our data are presented under three headings; Student voice, Expert feedback and staff reflections to offer viewpoints from all stakeholders involved.

Student Voice

One of the early challenges for students was their understanding of the relevance of the project to their subject specialism of interior design. When asked to reflect on the project one student commented "don't assume that just because the type [of project] isn't directly linked to interior design that it won't be useful to you or your skill development". Taking them out of the traditional studio learning environment was seen as positive to some, "the freedom of direction was great" commented one student, while another highlighted the difficulties of "working around other team members schedules and making sure that everyone put equal effort in".

The group selection process was also challenging for some students. Working with students they were not familiar with, they were asked to discuss, negotiate and agree upon an allocation of tasks based on individual strengths and weaknesses. One student described "it is alright to let the ropes go and be led, instead of always stepping up to lead the group. I learnt to encourage others for their opinions and improved my workshop abilities and developed my understanding of technical practices".

It is clear from our in module findings that students wanted more guidance from tutors around the development and management of shared ideas. One student was clear that they would like "more guidance and reassurance in how particular tasks can help students, even if indirectly'. While each group was invited to a weekly tutorial with further opportunities to share best practice with the wider student group, the teaching team were keen to act as facilitators and let the group direct itself.

Many students were clear that one of the best things about the project was "working with a real client, with people you wouldn't normally work with". This engagement with industry helped students to focus their ideas and be professional in their approach. Students are also encouraged to communicate with their experts and the wider group through a blog and use this as a tool to record their process and reflect upon it, thus learning valuable communication skills.

One student commented "In the early stages when we got our expert we said that we didn't want that particular client, but then when you think about it, whoever you have, its similar to real life. You don't choose your client. You learn how to deal with them, and convince them, and from simple ideas you can make a really good project".

In discussion with students two years after they had taken part in the project, one student was keen to highlight that "for me now, after that project, I always think about the experience of the user. […] in every project I do I try to explain the experience through materiality".

Expert Feedback

The experts we spoke to felt this was a beneficial project to be involved in. The idea that this was an innovative way of working and a new opportunity, both to learn and work in a different manner were reasons given for taking part in the project.

The interdisciplinary way of working was described as a key plus point to taking part in the project – one expert described "the great diversity of projects and approaches from different backgrounds" as a stimulus for their own research work going forward.

Student confidence and professionalism were highlighted as strengths within the project; the standard of the work produced was surprising to many experts.

There was a tension from the experts viewpoint in relation to the timescale of the project and the expectations regarding amount of time needed from them. One expert said "more time needed to be given over to experts to interact and work with the students on the installation". They also stated that in that they felt the students needed more time to spend on the project.

Staff Reflections

There were six staff working on this project. From the staff feedback it is suggested that one of the key strengths of this project was the chance to be interdisciplinary. One staff member suggested it was the "mixing together of many profiles, skills and backgrounds" that made it a success. The staff teaching team provides a range of experience working across the disciplines of interior, visual communication, product and fine art.

One of the key challenges faced by all staff was achieving the outcome within the three-week time period set for the project (in 2015/16). It was felt there were tensions for staff between taking risks and letting students "get on with it" and stepping in to make sure the exhibition actually took place. One staff member described the importance of space for "practice based experimentation" and was concerned that this time period did not allow for it.

Discussion

From the results of the study, it appeared that the learners on this module perceived the module as largely worthwhile. We discuss our findings under three themes; 'the importance of employability'; the 'challenges of collaboration' and 'time for reflection and autonomy'.

The Importance of Employability Skills

The importance of working with external stakeholders was clearly valued by students, experts and staff. Students in particular valued the skills that they perceived would support them in employability – working with people external to the university, communicating with clients in a range of different settings and learning to work effectively as a group.

The experience of this module, has, for some students, had long-term impact – the student who described herself as always 'thinking of the user' as a result of doing this project.

There was a high intrinsic value, which extended beyond the module. Students were producing a sizable and self-contained end product in an exhibition setting to a public audience, and many of them felt this was an achievement in its own right. This tangible output was the result of a new and sometimes uncomfortable learning experience for students that went beyond the normal studio practice and extended the module learning outcomes into transferrable, authentic 'employability' skills. The 'authenticity' of the module is in the 'real' outcome as a vehicle for student learning.

The Challenges of Collaboration

Meeting professionals working across a range of disciplines was the key driver in the design of this module. It was also important for staff to organize the student groups in such a way as to offer cross-fertilization between the different years. This approach provided each cohort with an opportunity to learn with and from each other.

The process of co-design involving negotiation and consultation with both peers and external experts was seen as a challenge that created tensions for both the students and the staff. When working in interdisciplinary teams the idea of 'letting go' what you know or your way of working is key to successful collaborations (Svensson, 2003). From the data, students, experts and staff struggled with being able to do that. One student highlighted that the most challenging aspect was the group dynamic and trying to get everyone to work as a team.

A number of students asked for more guidance within the structure of the project during the on-module evaluation. Expert feedback also showed that they felt they needed more time to effectively work with the students on the project. Staff also shared concerns about their role in facilitating the students to get the work complete within the allotted timescale.

Time for Reflection and Autonomy

There were inconsistencies in the responses from the students when the data was compared across the on module evaluation and the questionnaire. The staff team commented that the module evaluations took place during the project but before the exhibition opening night. Many of the positive comments from the students were describing the exhibition opening night as a success. 'Our work looked amazing!', said one student, while from another "well guys, we've managed to do a pretty good job, despite some technical errors. Everyone's work looks amazing, and I'm really lucky to be working amongst so many talented, creative and innovative people. I was chuffed to bits with how every group had contributed something fantastic to the CoLab project".

The module required students to reflect on their experiences and to use both reflection-in-action and reflection-on-action. Beard and Wilson have described reflection-in-action occurring during the experience band which involves making sense of the experience while it is happening. Reflection-on-action occurs when the students think about their experiences, analyze them and produce personal theories (Beard and Wilson, 2002-197). This ability to reflection on and in action encourages deep learning (Gibbs, 1992-2).

Many students did not manage to achieve the autonomous 'reflection-on-action' and from our follow up questionnaire and interviews is seems some students needed space and time to see the relevance of the project to their specialism. And for many this reflection did not happen until the students move beyond the university environment.

Concluding Reflections

The module was designed to offer students the opportunity to develop skills that are appropriate and transferrable to employment. Students were encouraged to make connections between their studio practice and apply this creative design approach of problem solving, to more direct real life issues. This experience would provide them with a range of key employability skills as well as the opportunity to see their ideas and making, put into practice, in a real life setting.

However, the module was also designed to foster deeper learning and encourage students to work with meaning so that their learning was transformed in some way. It was hoped that through reflection, students would apply the knowledge and experiences gained from this real life context, to future contexts, and that it would impact upon their approach to and the outcome of, their design project work. It is evident from our data that some students have been able to transfer their learning in this way, however not all students have the capacity to develop a reflective approach.

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“Pecha Kucha” presentation style as a way to increase fashion design students’ ability to present, articulate and communicate fashion design concept effectively

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ABSTRACT

LASALLE College of the Arts is a tertiary education institution in Singapore and has a current enrolment of 2300 students, offering Diplomas Degrees and Masters programmes. The population of students is 60% Singaporeans and 40% foreigners, mostly from Southeast Asian countries. Every year, all the students from the BA (Hons) Fashion Design and Textiles degree programme who progress from the year two to the year three are requested to develop, articulate and formulate a fashion concept that will form the basis of their Graduate Collection. The graduation collection represents the culmination of the students’ studies and reflects the integration of theoretical knowledge through the practical and technical skills of each student. The fashion design students usually presents their collection during a graduate fashion show at the end of the academic year.

Presentation and oral communications are often assumed having been acquired during previous courses (Shaw, 1999). This assumption also exists in LASALLE College of the Arts. These skills are often neglected, as they are not the main objective in the curriculum. This is reflected in the poor abilities of graduating students to present and articulate their research and creative outcomes with confidence (LASALLE Division of Students Administration, 2013). The students are not lacking of creativity and they are perfectly capable of applying theoretical knowledge on their designs, but when they are asked to present and summarise the research and ideas behind their fashion concepts, they have difficulties to express the rationale in a systematic and articulated manner. Grubaugh (1990) stated that many students have a difficult time anticipating and making oral classroom presentations. Outside of school, formal and informal speaking is also difficult. Talking in front of a public is an intimidating act. A study by Kember (1996, 2000) stated that some students attempt to memorise their text for presentation and this method has been widely attributed to Asian students. A student adopting a surface approach does not seek understanding and therefore relies to memorisation, says Kember (1996). Marton and Saljo (1976), in an exercise where students were asked to read an academic article, argued that students adopting a surface level processing directed their attention to the text itself, employing a reproductive orientation learning method. Deep level processing on the other hand implied that attention was directed toward the intended underlying meaning of the article. Rote learning is widely utilized in Asian education systems and gives excellent results (Li, 2005).

Experience from our classrooms show that to articulate deep creative concepts, in a fashion design context, memorisation techniques are not efficient. It is essential for students to be able to construct arguments rather than present already composed written arguments to enable them to liberate their creative potential.The purpose of this study was to examine the use of Pecha Kucha presentation style in a fashion design studio environment, instead of a traditional PowerPoint presentation style to explore students’ abilities to increase concept presentation, articulation and communication skills. Students from class BAFDT5A were introduced to the Pecha Kucha methodology. Students also attended the Singapore Pecha Kucha Night and presented 4 times their collection concept over a period of 4 weeks. Students were also given an assessment form for peer review. Lastly marks were compared with the marks form the previous cohort and the results showed and increase of final semester marks to the highest bandings.The information generated by this study will be of value to Fashion Design lecturers working the School of Fashion, but could be applied to any design programme. The results could provide design lecturers with a concrete method that could ultimately improve students’ oral presentations.

Keywords

Pecha Kucha, fashion concept, fashion design

INTRODUCTION

LASALLE College of the Arts is a tertiary education institution in Singapore and has a current enrolment of 2300 students, offering Diploma Degrees and Master programmes. The population of students is 60% Singaporeans and 40% foreigners, mostly from Southeast Asian countries. Every year, students from the Fashion Design and Textiles programme are requested to develop, articulate and formulate a fashion concept that will form the basis of their graduate collection. The fashion design students usually present their collection during a graduate fashion show at the end of the academic year. The graduation collection represents the culmination of the students' studies and reflects the integration of theoretical knowledge through the practical and technical skills acquired in this particular domain of design. In design studio classes, students would develop a broad conceptual approach of the principles in fashion design and are expected to expand their visual literacy to support conceptual innovation in fashion. The fashion concept is what ties up all the elements of a fashion collection together to create meaning, depth and aesthetic values. Fashion students need to be able to communicate effectively the essence of their design ideas to their peers in the classroom and subsequently to the world when they would enter the industry. But students often struggle to communicate their creative ideas effectively. They get easily confused and don't know how to organize their ideas and thoughts in an orderly manner when they are asked to present to their classmates or during individual consultations. The idea to use Pecha Kucha presentation style appeared to be a potential solution to this problem as this presentation style, in which 20 slides are shown for 20 seconds each, in 6 minutes and 40 seconds in total, has been used by architects, management or medical educational courses, to keep students presentation concise and fast-paced. The slides do not have bullet points, but rather a picture. As the pictures transition across the screen, the speaker simply tells a story. This study explores the utilization of this method in a fashion design studio context.

Statement of Problem

Presentation and oral communications are the most widely used skills in human interactions and are often assumed having been acquired during previous courses. They are often neglected, as they are not the main objective in the curriculum. It can be difficult to schedule speaking time in a large class. No special effort is made in this area, in a practical design studio context, as it takes up time from lectures and discussion, tutorials or on important subject matters. This is reflected in the poor abilities of graduating students to present and articulate their research and creative outcomes with confidence. The students are not lacking of creativity and they are perfectly capable to apply theoretical knowledge into their designs, to propose and realize fashion collections. But when they are asked to present the origin and the essence of their ideas, they have difficulties to express them in a systematic and articulated manner. There are various reasons that can explain the difficulty students have to be fluid with the communication of their ideas. Grubaugh, (1990) stated that many students have a difficult time anticipating and making oral classroom presentations. Outside of school, formal and informal speaking is also difficult. Talking in front of a public is an intimidating act. A study performed by Kember (1996, 2000) stated that some students attempt to memorise their text for presentation and this method has been widely attributed to Asian students. Spontaneity is a key element to speak and articulate arguments freely to liberate the speech. A lack of confidence can also be a hindrance for students to dare to speak and express themselves. Higher levels of self-esteem within a classroom setting, regardless of biological sex, has been related to lower levels of communication apprehension (Daly, Caughlin, & Stafford, 1998). The fear of saying something wrong can keep students from expressing themselves and discourage them to speak. One of the many aspects that can help students to articulate and communicate their design processes more effectively is to rehearse and repeat presentations. There are reports that assert oral presentation skills are important because they enable students to demonstrate higher levels of cognitive thinking and development (Maes, Weldy, & Icenogle, 1997; Ulinski & O' Callaghan). Presentation skills seem to be the appropriate tools I would use to train students to elevate students' cognitive capacities to help them organize their fashion concepts.

I'm proposing with this study to implement and test a presentation style, called Pecha Kucha that has been practiced successfully in different educational programmes such as marketing, business or even master thesis writing. What has been discovered is that Pecha Kucha stimulates rhetorical revision of students' initial arguments. Laurie E. Gries (2010). The Pecha Kucha slideware is used to construct arguments rather than present already composed, written arguments. This is what expected from students when presenting their collections. The purpose of this study will be to examine the usage of Pecha Kucha presentations techniques in a fashion design studio setting. The specific research questions addressed in this paper will be the following: Would the introduction of Pecha Kucha presentation style increase fashion design students' ability to present, articulate, and communicate fashion concepts effectively?

Methodology

That study was performed in one class of bachelor degree students enrolled in the Fashion Design and Textiles programme. The students enrolled were in their third year and were specialising in four different areas: Womenswear, menswear, fashion textiles and creative pattern cutting. That class composed of students from Singapore, China, Malaysia, Indonesia and India. There were 14 female students and one male student. The study period was scheduled in five sessions. Oliver and Kowalczyk (2013) thought it was important to provide students with additional training and support before the final presentations. The first session was an introduction of the Pecha Kucha presentation style explaining the principles of the presentation and live examples were shown to the students using videos from the Pecha Kucha website and from YouTube (http://www.pechakucha.org/). The next session brought the students to the Singapore Pecha Kucha Night 2015 edition that luckily took place at the National Design Centre during the period of the study, where more than 20 individuals presented a large variety of topics to a full house, all in the Pecha Kucha form. This was a valuable experience for students who had never seen a fast pace presentation live. The three following sessions were scheduled for each student to present their graduation collection creative process in 20 slides. Students were asked to narrate their creative journey with images. In total each students was scheduled to present their Pecha Kucha slides four times, including the final presentation. Arias, M. P. (2014) suggested to introduce a question period at an intermediate stage with the other students and the tutors posing questions at the end of each intermediate presentation. After each student's presentation, the lecturer commented on the points that were not addressed during the presentation. A question and answer session followed where comments from peers addressed the clarity of concept delivery, the speech delivery or the quality of eye contact. The lecturer and the students were equipped with the same assessment forms, with specific learning outcomes to achieve, to provide written feedback on different aspects of each presentation. The results of the evolution of presentations, week after week, were compiled and posted on the learning portal, for students to monitor the progression of their presentations. The last session was the final presentation for the students, where students presented their graduation collection, for final semester assessment, in a Pecha Kucha format. Oliver and Kowalczyk (2013) in their study wanted to reduce the time students use to talk about their background information and enhance the talking about critical facts, key takeaways, and analyses for marketing presentations. Similarly, fashion design students would have to synthetise all the information pertaining to their graduate collection concept, in 20 slides. The results from the presentation grading were compared to the previous academic students batch to see if there were improvement in students communication abilities.

Procedure

The first presentation using Pecha Kucha style gathered 15 undergraduate students (14 females, one male) from the Fashion Design and Textiles programme were invited to participate to the Pecha Kucha workshop (Table 1). None of the student had prior exposure to Pecha Kucha, before the study was initiated. The first participation of the students to this study was started with only seven students' participation. The other decided to prioritize tasks as the intervention took place in the second part of the second semester, where students were busy with the production of their graduate collection. It would be beneficial to introduce this presentation style earlier, at the beginning of the student's first semester. The presentation to the students started with the by distribution of the assessment forms

Beyer (2011) evaluated students on content, organization, voice quality, eye contact, visuals aids, and an overall score for the presentation. A similar system (Form 1) was used and presented to the students. The assessment criteria were explained right after the introduction to Pecha Kucha. Some students went over the required timing so the Pecha Kucha principles were reiterated. Expectations were explained to students during the first presentation. Students were quite accurate and consistent in the feedback they provided for their peers. Students engaged in the feedback critique and questioned what was asserted in the presentation, therefore helping each presenter to clarify the origin or nature of each student's concept. The different assessment criteria were addressed during the question and answers. When the lecturer estimated that the comments were insufficient, he addressed different points, highlight the interesting part of the concept that needed to be developed to help the student to see what was interesting about their creative journey and acknowledged the elements of the concept that need to be highlighted. Both students and instructor rated presentations to in the good or very good range. There were no significant differences for any of the presentation quality as rated by the instructor or the students (Table 2). That demonstrated the assessing process and the quality expectations are well integrated by students. Grades were not very high as expected for a first presentation. There were no significant differences, regardless of presentation style, in assignment grades, hours studied per week, presentation preparation time, or attitudes towards assigned presentation style. Thus, students who used Pecha Kucha did not spend more time preparing for their presentations. A final experiment examined differences in presentation style using a within subjects design to account for individual differences across presenters. Students' comments for this presentation focused on the quality of the speech and the organization of the images in the presentation to clarify the concept of the collection. Students at this stage were all trying to get used to the presentation style and remember their ideas.

For the second presentation using Pecha Kucha style, five students participated in the second session, and two students were doing it for the second time (Table 1). All the other students were new, and didn't attend the first introductory session. The procedure was the same as during the first presentation. New students were briefed on the assessment and feedback procedures. The results in from the Pecha Kucha presentations marks (Table 2) demonstrated that the students, who presented for the first time, scored the same grades as the students who presented for the first time in the previous session. The grades given by students and by the lecturer were still within the same range. These results demonstrated again that the marking criteria (Form 2) were well integrated by the entire student's cohort. The two students who participated in the first presentation session improved their overall rating grades, showing that they were more confident in the second session. The feedback comments addressed higher level of confidence, better speech quality and clearer articulation of concept. As Levin and Peterson (2013) stated in their study, that the overarching goal of the Pecha Kucha assignment is to teach students how to communicate an argument with a clearly stated thesis. The individual rehearsal of the Pecha Kucha and the preparation the students did after the first presentation were starting to show positive results and transformation in their ability to communicate their ideas. The quality of their presentation was enhanced. Students were slowly building confidence in visual literacy.

For the third presentation using Pecha Kucha style (Table 1), eight students participated and two students were doing it for the third time. All the other students were doing it for the second time, one coming from the second session and four coming from the first session. At this stage two students never attended any of the sessions (Table 1). The procedure was the same as those in the first and second presentations. The results in Table 2 shows that the students overall maintained the quality of the standard acquired in the previous presentations. At this stage, there was more improvement in the lecturer's feedback than the students'. The students' comments were putting emphasis on smaller adjustment details, related to the presenters' posture or the eyes direction, rather than more important missing elements in the slides, as it was the case in the first presentations. Some students made a positive comment after the presentation. They said they liked the Pecha Kucha because they couldn't read the notes they

had initially inserted in their slides and they also mentioned they had to fasten their speech pace with the slide timer. All of them stopped commenting what was visible in the slides images and started to talk about background information that were not visible from the slides. Some students started to be able to construct an argument rather than present already composed written arguments from their notes. Some other became capable to formulate initial rhetorical revisions of initial arguments.

Data Analysis

The data was compared with results from each preceding presentation and with results from the previous academic year (Table 3). The comparison of students' final semester grades for their graduate collection presentation, between the cohort from 2014-15 (Form 3), and 2013-14 (Form 4), demonstrates a visible increase of grades in the upper section of the grading band. Of the 15 AY 2014-15 students, 20% achieved grades in the 90-100% band, against 0% in the previous year. Of the student cohort, 33.3% achieved grades in the 80-89% band, against 5.8% in the AY 2013-14 cohort. The results demonstrate that the students in the AY 2014-15 were higher achievers and were capable of developing more complex concepts and articulating a higher level of thinking. The marking descriptor (Form 1) shows that students achieved an exceptional grasp of the principles and practice of the design process to produce highly creative concepts with exceptional development of research with relevant theoretical underpinning. There was exceptional communication of information, arguments and analysis at a professional level. The Pecha Kucha sessions visibly played a role in the students' ability to articulate their fashion concepts for the final presentation of their graduate collections. The repetition and the rehearsal of the presentation technique played a role in their ability to present and articulate their ideas. Not all the benefits of the increase of the marks can be attributed to the Pecha Kucha. The students' commitment and preparation also contributed to the higher grades. The Pecha Kucha itself was not sufficient. Some students who didn't come actively to the training sessions scored well at the end of the semester, showing that some students already had the talent in presenting themselves and their work. They however had been informed about the principles of Pecha Kucha and were aware of the presentation system. The assessment forms form AY 2013-14 (Form 4) and the assessment form from AY 2014-15 (Form 3) is slightly different in the wording. They however address the same assessment criteria that have been made more explicit in the AY 2014-15 The learning outcome that was addressing fashion concept development in AY 2013-14, was in the third section, practical an professional skills and was addressed in this form: Synthesise theoretical knowledge, critical analysis and technical skills to contextualise and realise a range of creative fashion design and textiles proposals. It has been made clearer in the AY 2014-15 form by the ability to orally, visually articulate and communicate a concept, and the ability to translate the research findings into creative outcomes. The same criteria had been assessed and compared with the results of the two different academic years.

Conclusion

The findings indicated that Pecha Kucha helped improve some aspects of students' presentation skills. All the students managed to get their collection concept across and they all managed to learn how to engage with the audience. Findings indicated that some aspects of students' presentation quality improved and students gained confidence to articulate their creative concepts in front of an audience. It liberated the students from the rigidity of a traditional word based presentation, based on rote memory, and engaged them in a more intuitive type of presentation. Students were subsequently interviewed by a national TV crew in the context of the students' participation to the Singapore Fashion Week New Gen category. The interviewers commented that the four students who were questioned and who all participated to the Pecha Kucha experiment were confident in front of the camera and expressed clear viewpoint regarding the inspiration behind their collections. This event seemed to demonstrate that beyond the marking and the grading of each presentation, students developed speech autonomy and the capacity to articulate concepts verbally.

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Appendix

STUDENT'S PARTICIPATION					
		1st presentation	2nd presentation	3rd presentation	Final presentation
1	Student 1	x	x	x	x
2	Student 2		x		x
3.	Student 3	x		x	x
4.	Student 4		x		x
5.	Student 5	x		x	x
6.	Student 6			x	x
7.	Student 7				x
8.	Student 8	x		x	x
9.	Student 9	x		x	x
10.	Student 10		x	x	x
11.	Student 11	x			x
12.	Student 12				x
13.	Student 13	x	x	x	x

Table 1. Students participation to the Pecha Kucha presentation sessions.

	Students names	1st presentation. Student's average grading banding		2nd presentation. Student's average grading banding		3rd presentation. Student's average grading banding		Final presentation. Summative grade
		Student ratings	Lecturers ratings	Student ratings	Lecturer ratings	Student ratings	Lecturer ratings	Lecturers ratings
1	Student 1	50	50	60	60	60-70	60	60
2	Student 2	-	-	40	40	-	-	50
3.	Student 3	50-60	50	-	-	70	70	90
4.	Student 4	-	-	50-60	50	-	-	70
5.	Student 5	50-60	50	-	-	50-60	50	70
6.	Student 6	-	-	-	-	60-70	60	70
7.	Student 7	-	-	-	-	-	-	30
8.	Student 8	60	60	-	-	60-70	60	70
9.	Student 9	50-60	50	-	-	50-60	60	90
10.	Student 10	-	-	50-60	50	60-70	60	70
11.	Student 11	50-60	50	-	-	-	-	50
12.	Student 12	-	-	-	-	-	-	70
13.	Student 13	60-70	60	60-70	60-70	60-70	70	70

Table 2. Pecha Kucha presentations marks from students and lecturer. Marks are marked from 0 to 100%. Threshold is at 40%.

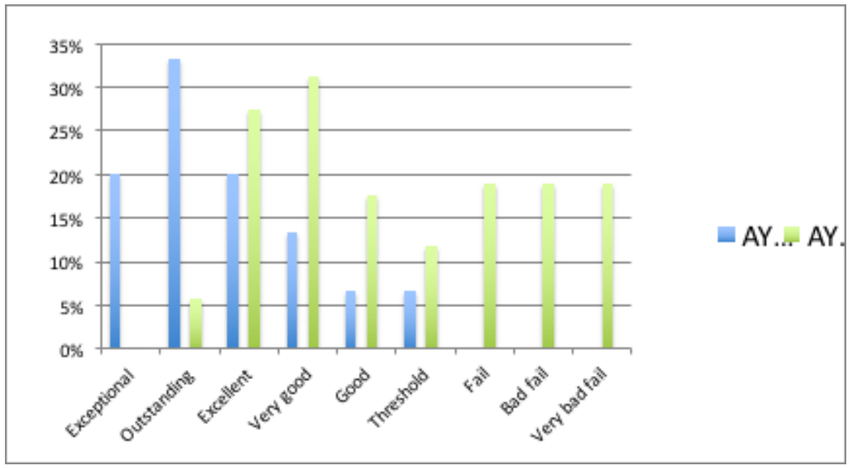


Table 3. Comparison of students' grades between 2013-14 cohort and AY 2014-15 cohort.

BACHELOR OF ARTS (HONS) IN FASHION DESIGN & TEXTILES / SECTION B

Faculty of Design – Marking Descriptors (Undergraduate)

Mark Band	Practical Work	Creative Process Journal	Dissertations/Written Essay/Report	Oral Presentations/Seminar Presentations (Group or Individual)	Achievement of Learning Outcomes
0%	Non submission or plagiarised assessment	NA	NA	NA	NA
1-9%	No grasp of the principles and practice of the creative process to produce unrelated concepts No handling of materials and techniques No level of professional practice	No communication of information, arguments and analysis No understanding of theory and practical contexts No reflective skills and evaluative skills	No communication of information, ideas and arguments No use of language No appropate and method	No communication of information, ideas and arguments No professional presentation No time management	None of the learning outcomes achieved
10-24%	Little grasp of the principles and practice of the creative process to produce unrelated concepts Little handling of materials and techniques Little professional practice	Little communication of information, arguments and analysis Little understanding of theory and practical contexts Little reflective skills and evaluative skills	Little communication of information, ideas and arguments Little use of language Little approach and method	Little communication of information, ideas and arguments Little professional presentation Little time management	Few of the learning outcomes achieved
25-39%	Unsatisfactory grasp of the principles and practice of the creative process to produce insufficiently realised or derivative concepts Unsatisfactory handling of materials and techniques Unsatisfactory level of professional practice	Unsatisfactory communication of information, arguments and analysis Unsatisfactory understanding of theory and practical contexts Unsatisfactory reflective skills and evaluative skills	Unsatisfactory communication of information, ideas and arguments Unsatisfactory and inaccurate use of language Unsatisfactory approach and method	Unsatisfactory communication of information, ideas and arguments Unsatisfactory professional presentation Unsatisfactory time management	Some learning outcomes not achieved
40-49%	Satisfactory grasp of the principles and practice of the creative process to produce effective but sometimes derivative concepts Satisfactory handling of materials and techniques Satisfactory level of professional practice	Satisfactory communication of information, arguments and analysis at a professional level Satisfactory understanding of theory and practical contexts Satisfactory reflective skills and evaluative skills	Satisfactory communication of information, ideas and arguments Satisfactory but sometimes inaccurate use of language Satisfactory approach and method	Satisfactory communication of information, ideas and arguments Satisfactory professional presentation Satisfactory time management	Learning outcomes achieved to a limited but adequate level
50-59%	Good grasp of the principles and practice of the creative process to produce original and effective concepts Generally good handling of materials and techniques Good level of professional practice	Good communication of information, arguments and analysis at a professional level Good understanding of theory and practical contexts Good reflective skills and evaluative skills	Good communication of information, ideas and arguments Generally good and mainly accurate use of language Good approach and method.	Good communication of information, ideas and arguments Good professional presentation Good time management	Generally sound achievement of learning outcomes
60-69%	Very good grasp of the principles and practice of the creative process to produce creative and sophisticated concepts Consistently good handling of materials and techniques Very good level of professional practice	Very good communication of information, arguments and analysis Very good understanding of theory and practical contexts Very good reflective skills and evaluative skills	Very good communication of information, ideas and arguments Consistently good and essentially accurate use of language Very good approach and method	Very good communication of information, ideas and arguments Very good professional presentation Very good time management	Consistently good achievement of the learning outcomes
70-79%	Excellent grasp of the principles and practice of the creative process to produce excellent and well-developed and executed concepts Confident handling of materials and techniques Excellent level of professional practice	Excellent communication of information, arguments and analysis at a professional level Excellent understanding of theory and practical contexts Excellent reflective skills and evaluative skills	Excellent communication of information, ideas and arguments Confident and substantially accurate use of language Excellent approach and method	Excellent communication of information, ideas and arguments Excellent professional presentation Excellent time management	Achievement extending beyond the learning outcomes
80-89%	Outstanding grasp of the principles and practice of the creative process to produce well-informed, highly creative, outstanding and finished concepts Fluent and fully assured handling of materials and techniques Outstanding level of professional practice	Outstanding communication of information, arguments and analysis at a professional level Outstanding understanding of theory and practical contexts Fully developed reflective skills and evaluative skills	Outstanding communication of information, ideas and arguments Fluent and fully assured use of language Outstanding approach and method	Outstanding communication of information, ideas and arguments Outstanding professional presentation Outstanding time management	Substantial achievement extending well beyond the learning outcomes
90-100%	Exceptional grasp of the principles and practice of the design process to produce highly creative concepts with exceptional development of research with relevant theoretical underpinning Confident handling of materials and techniques Exceptional level of professional practice	Exceptional communication of information, arguments and analysis at a professional level Exceptional understanding of theory and practical contexts Exceptional reflective skills and evaluative skills	Exceptional communication of information, ideas and arguments Confident and substantially accurate use of language Exceptional approach and method	Exceptional communication of information, ideas and arguments Exceptional professional presentation Exceptional time management	Exceptional achievement extending beyond the learning outcomes

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LASALLE COLLEGE OF THE ARTS

Form 1. Marking descriptors

BA (HONS) FASHION DESIGN AND TEXTILES

PECHA KUCHA 1ST PRESENTATION: Semester 2, AY2013

Presentation by				**Class**	BAFDTN6A
Module	Graduate Portfolio: Graduate collection	**Module Code**	B-FH304	**Credits**	40
Assessed Items	Pecha Kucha Presentation	**Presentation Date**	25/03/15	**Specialism**	Womenswear/ Menswear/ Fashion Textiles/ CPC

ASSESSMENT CRITERIA	80-100% Exceptional	60-69% Outstanding	70-79% Excellent	60-69% Very good	50-59% Good	40-49% Threshold	25-39% Fail	10-24% Bad fail	1-9% Very bad fail	0% Non submission or plagiarised assessment
Clarity of narratives: Ability to visually articulate and communicate a fashion concept										
Respect of timing: Ability to organize and execute work within a given time frame										
Speech delivery: Ability to deliver a speech										
Eye contact: Ability to engage with the audience										
Overall indicative grade										

FEEDBACK

LASALLE COLLEGE OF THE ARTS

Form 2. Assessment form used in AY 2014-15 for the three first Pecha Kucha presentations

BA (HONS) FASHION DESIGN AND TEXTILES

SUMMATIVE Assessment Form (Academic Year 2014.15 Semester 2)

Student Name	XXXX	**Student ID**	XXXX	**Class**	BAFDTN6A
Module	GRADUATE PORTFOLIO: Graduate Collection	**Module Code**	B-FH304	**Credits**	40
		Submission Date	27/04/15	**Punctuality**	ON TIME/ LATE
Assessed Items	1) Portfolio (80%) 2) Creative Process Journal (20%)	**Submission Time**	9:30am	**Specialism**	Womenswear/ Menswear/ Fashion Textiles/ CPC

Assessed Learning Outcomes

Knowledge & Understanding	• Critically evaluate and respond to the notion of fashion design and textiles as a collaborative commercial system with interactions between various stages • Propose a creative outcome that synthesizes the relationship between theory and practice
Cognitive Skills	• Synthesise knowledge and experience and propose alternative solutions to a range of design issues
Practical & Professional Skills	• Synthesise theoretical knowledge, critical analysis and technical skills to contextualise and realise a range of creative fashion design and textiles proposals • Present creative projects to fashion industry professional standards
Transferable Skills	• Contextualise, propose and organise self-directed and group projects to simulate a professional working environment • Identify and assess key areas and future possibilities for continuing professional development of a career in fashion

CPJ content (20%)	80-100% Exceptional	60-69% Outstanding	70-79% Excellent	60-69% Very good	50-59% Good	40-49% Threshold	25-39% Fail	10-24% Bad fail	1-9% Very bad fail	0% Non submission or plagiarised assessment
Ability to conduct research in response to the project brief										
Ability to explore with a range of design methods										
Ability to critically reflect in writing										
Ability to articulate a narrative creative process										
Overall Indicative Banding										

Portfolio content (80%)	80-100% Exceptional	60-69% Outstanding	70-79% Excellent	60-69% Very good	50-59% Good	40-49% Threshold	25-39% Fail	10-24% Bad fail	1-9% Very bad fail	0% Non submission or plagiarised assessment
Ability to orally articulate and communicate a fashion concept										
Ability to visually articulate and communicate a fashion concept										
Ability to translate the research findings into original creative outcomes										
Ability to evaluate and select innovative fashion techniques to realize your fashion concept										
Ability to present work to a professional quality standard										
Ability to manage work within a given time frame										
Overall Indicative Banding										

LASALLE COLLEGE OF THE ARTS

Form 3. Assessment form used in AY 2014-15

MixMedia narratives workshop: multimedia design production on a multidisciplinary team

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ABSTRACT

There is increasing concern about integrating multidisciplinary collaboration in design higher education, as part of the curricula of design courses and particularly those that use digital media and new technologies for multimedia projects or interactive applications. This paper describes the MiXMEDiA NARRATIVES workshop aimed at simulating the reality of media production and the paradigm shift of digital integrated newsrooms. Its objective was to evaluate the multi and trans-disciplinary challenges of the background knowledge needed for the production of digital media content.

Integrating students from design, journalism and cinema in real-life situations of team editorial development, with professional feedback in collaboration with the editorial team of Expresso.pt. This newspaper is one of the most important titles in Portugal and a reference for the Portuguese journalism during the recent 44 years of the country's democratic system. Born in 1973, just one year before the 1974 revolution, it became a journalistic reference for the public through its weekly rich and diversified edition. Expresso was the 1st newspaper in Portugal to launch its paper edition in html format and more recently a digital daily edition in May 5, 2014. This last format was the prototyping canvas used during this experiment.

The workshop provided an opportunity to analyze the challenges of multidisciplinary collaboration in teams of future professionals and the way in which they produce digital mixed-media content with actual publication purposes. The workshop had several sessions from initial briefing and concept development to the final presentation of functional prototypes.

An editorial member from Expresso.pt's team supervised the sessions with the presence and support of the teachers from the several courses involved. The data gathered from observation notes, photos and video during the workshop sessions, was combined with the results of the survey, the feedback from the faculty members and the observations of the external professionals from Expresso.pt's editorial team. The mixed analysis produced allowed the team to draw conclusions based on the pertinence of these working environments for the development of a multidisciplinary culture and practice of design in the area of digital mixed media production.

Keywords

mixmedia narrative, multidisciplinary design, prototyping

INTRODUCTION

The MiXMEDiA NARRATIVES workshop was aimed at simulating the reality of media production and the recent paradigm shift of the digital integrated newsrooms. Its objective was to evaluate the multi and trans-disciplinary challenges of the background knowledge needed in the production of digital media content. Integrating students from design, journalism and cinema in real-life situations of team editorial development, with professional feedback in collaboration with the editorial team of Expresso.pt, the workshop provided an opportunity to analyze the challenges of multidisciplinary collaboration in teams of future professionals and the way in which they produce digital mixed-media content with actual publication purposes. In the scenario of technological challenges of the new paradigm of digital newsrooms, two apparently contradictory tendencies of professionals' adaptation and new learning methods can be described (Garcia-Aviles, 2004, 2011): the need for profiles with multiple technical media editing knowledge (writing, photography, video), "multi-skilling" and new professional specializations in digital media areas relevant for the production flux of digital newsrooms, web-designers and developers and data specialists. The design of digital publications creates changes at the level of the teams involved and the processes they use for content production and development. The trans-disciplinary know-how of the actual media production is leading to deep transformations in team structure and its professional sustainability model. There is increasing concern about integrating multidisciplinary collaboration in design higher education, as part of the curricula of Design courses (Fleischmann 2008, 2015), and particularly those that use digital media and new technologies for multimedia projects or interactive applications. Such media contents promote inter-disciplinary collaborations at all levels, for which it becomes relevant to test and evaluate curricula experiences of multidisciplinary practice and development in design courses. The ultimate objective of multidisciplinary team collaboration is not just the change of the individual profiles but the transformation of the interdisciplinary relational behavior and consequent trans-disciplinary practices reflected in the final outcomes. Another structural component of the studies of Fleischmann and Daniel (2015) and Angus and Doherty (2015) is the necessary relationship between the curricular practice of multidisciplinary education and the real world of professional practice integrating several disciplines. Providing the students with the opportunity of approaching "real problems" (Angus and Doherty 2015) with the added benefit of the participation of professionals, allows for the construction of realistic scenarios that replicate the several steps needed for creating a professional product (Fleischmann and Daniel, 2015). Such a framework is fundamental to the development of a design education methodology based on a real world driven problem and solution. The digital mixed media production requires approaches and solutions to problems that go beyond the traditional design perspective for the introduction of new physical products and relies on new processes, services, interactions, entertaining, collaboration and communication means, as well as other activities centered on the human being (Brown, 2009). At the core of this approach is the ability to be intuitive, recognize patterns and build ideas with emotional and functional meaning so that they can be expressed through the media in more than in words and symbols (Brown, 2009). Such trans-disciplinary initiatives and solutions require the ability to build collaboration and cooperation in project development in the practical, academic and scientific spheres of design (Vieira, 2017).

Defining Digital Mixed-media

The expression, digital mixed media (abbreviated here as MixMedia), is built upon the notion from Ryan (2003) that defines it as a specific typology of "narrative media", in which the type of sign in the media expression and the number of channels, are used to produce diverse narrative content in flexible media formats. This diversity in the material character of the media is also a subject of analyses by Jensen (2007) and brings it to the field of new digital media communication, giving the expression a refreshed aesthetic perspective:

> "Mixed media' that combine materials in more or less innovative ways are a familiar format in artistic practice and criticism. The aesthetic gaze and the camera eye, as developed by Bolter and Grusin (1999) and by Manovich (2001), are valid perspectives on new, mixed media, as well" (Jensen 2007, p. 21).

According to Jensen (2007) this new aesthetic needs to integrate the digital interfaces based inputs with the physical models of meaning in their narrative reality. The digital mixed media narrative, the structural definition of which Jennings (1996) defined as reconfigurable and multifaceted, is particularly reinforced by Binder, Thomas, et al. (2004) in their specific simulation of mixed media environments for design students and is the field of this study.

Educational and Learning Proposal

The same concerns described by Fleischmann (2008, 2015) of integrating multidisciplinary collaboration in design higher education such as basic development of multidisciplinary practices and time constraints, staff competence, and university infrastructure are common to the design higher education system in Portugal. In the context of the Faculty of Arts and Languages of University of Beira Interior, Journalism, Design and Cinema undergraduate courses have limited contact at the level of common structural curricula units with direct connections to professional practice. Such units are journalistic production, multimedia production and direction and film genres. Students enrolled in these programs were involved in the experimental workshop with the purpose of developing interdisciplinary relationships and implementing practices of transdisciplinary outcomes for the final product.

The briefing proposed by an editorial member of Expresso.pt newsroom challenged students with mixmedia journalistic work for publication on the Expresso.pt website. The central theme was "The state of the country" before the 2015 governmental elections. All the journalistic production tools could be explored (interview, report, infographics, video, etc.). The selection of final work was dependent on the publication format and the Expresso.pt editorial team approval. Evaluation was centered on the multidisciplinary team project development and students' background courses were taken into account. Student's main learning objectives were conceptualization and production of journalistic content for a digital, social and multiscreen environment, implementing and validating a newsroom approach to the several disciplinary domains (Multimedia Design, Journalism, Cinema), effectiveness of multidisciplinary team work and analysis and evaluation capabilities of journalistic work in the context and practice of an integrated digital newsroom.

From a teaching and learning perspective the following questions were under examination:

a) What are the principal challenges of integrating students from different learning programs and different cultures of apprenticeship in teamwork?

b) What is the impact of the methodological and pedagogical approach on the quality of final prototypes and learning objectives?

The three main curricular objectives were coordinated and with the workshop took taking place in the same room at the same time for the three classes. For in order to encourage students' participation, evaluation criteria such as being in the workshop, justified absence and feedback to groups' and contribution were included. Evaluation criteria were also based on the curricular structure of each course. Journalism students were evaluated based on criteria such as journalistic value, technology used and content composition. Multimedia design students were evaluated based on criteria such as implementation of principles for interface design, prototyping methods, interface flow (UI), user experience (UX) for narrative content and adequate and innovative use of technology. Cinema students were evaluated based on production values (framing, editing and cinematography).

Methodological Approach

The workshop was developed with a semi-structured and semi-experimental approach involving mixed research methods and various procedures of data analysis. Two student levels were combined: undergraduates in multimedia design and cinema and graduate students in journalism. A total of 68 students participated in the workshop, 36 from multimedia design (ageing 20-28), 13 from cinema studies (ageing 19-24) and 16 from journalism (ageing 20-24, with one of 39). In the first session the students made up fourteen teams of four to five students according to their interest in the thematic proposals from both students and teachers (Table 1).

Group	Thematic	Journalism	Cinema	Multimedia Design
1	Marijuana regulation	1	1	3
2	Young African football players	1	1	3
3	Flux of Brazilian students to Portugal	2	1	2
4	Web tool as self learning	1	1	2
5	The role of teaching programming in the national education plan	1	1	3
6	Women's access to jobs in management	1	0	3
7	University retention and dropout rates	2	1	2
8	People as brands	1	1	3
9	Digital as disruptor of classic media	1	1	2
10	Mentality change towards homosexuality	1	1	3
11	False creation of jobs with public funding of private companies	1	1	2
12	New online professions	1	1	3
13	Arts degree, stay or leave the country?	1	1	2
14	New economy of the digital arts	1	1	3

Table 1. Teams of students' by disciplines and thematic

The themes were analyzed based on facts behind ideas and public relevance by the four teachers and the Expresso.pt editorial member, Pedro Monteiro, who presented the briefing and supervised the working proposal. Pedro has a background in design and is presently the multimedia content manager for Expresso.pt, participating in the planning, production and digital narratives editorial as well as the social network journal strategy and new editorial digital products.

The workshop was composed of five sessions during seven weeks between 13th of April and 29th of May 2015, with four working sessions and one evaluation session (Table 2). An extended editorial newsroom meeting took place in the first session for discussing ideas, themes, team building, role play and function and tasks distribution such as planning, searching, collecting of information and production of content.

The concept development phase according to the theme of each group started in session two, and involved low resolution prototype sketching (paper prototype). A break of two weeks took place after the first two sessions for information research, content production and thematic exploration of ideas. The integration of the produced contents and prototype concept selection took place in the third session. There was then a break of three weeks for further development of proposals. Integrating thematic content and media editing took place in the fourth session for deployment of functional prototypes following the guidelines and editorial formats of Expresso.pt. Students were given one final week to prepare the prototypes and presentations for the evaluation session.

A mixed-methods approach was adopted for analyzing this initiative which included the following methods: survey (scale 0 - 5), a group of five open questions and two binary questions, teachers observation based on qualitative daily notes, photographic image, video, low resolution prototype analysis, functional prototype analysis, comments and notes from the Expresso.pt supervisor. Students' answers were collected in the last session of the workshop before the publication of marks.

Workshop session	10:00 – 13:00	14:00 – 15:45	16:00 – 18:00
1. 14th April	Brief and Expresso.pt working proposal launch	Multidisciplinary teambuilding Digital product development methodology	Teamwork Sustained Studio
2. 15th April	Studio work and proposal building Detail working plan	Studio work and development of proposals Detailed working plan for each team member	Presentation of proposals
3. 29th April	Studio work on project development	Teamwork Sustained Studio	Teamwork Sustained Studio
4. 20th May	Studio work on project development	Teamwork Sustained Studio	Teamwork Sustained Studio
5. 27th May	Final presentation of prototypes for team projects	Presentation and evaluation of team prototypes	Presentation and evaluation of team prototypes

Table 2. Workshop timeline of activities per session

Session 1	Phase 1-Interpret
	
Session 2 and 3	Phase 2 – Develop Phase 3 – Diverge
	
Session 4 and 5 (prototypes presentation)	Phase 4 – Transform Phase 5 – Converge
	

Table 3. Visual Ethnography analysis (Photography and Video)

Working Sessions Visual Ethnography Analysis (Photography and Video) and Observation Notes

Fleischmann and Daniel's (2010, p. 64) learning framework for a real life scenario was the main methodology used during the workshop, but some specific procedures were added to accommodate the learning environment of the several degree programs involved in the workshop (multimedia design, journalism and cinema). The sequence of sessions during the global timeline of the workshop made use of the 5 phases characterized by Austin in his conceptual design framework (2001, p. 214): Interpret; Develop; Diverge; Transform; Converge.

The session notes and visual documentation in photography and video allowed for a more detailed analysis and final evaluation of the teams' work and student engagement with procedures and goals in the several work phases.

Expresso Editorial Member Comments

The comment of Pedro Monteiro, the editorial member of Expresso.pt is threefold:

Main challenges of the experience

> "Putting together teams of students from different cultures of apprenticeship and educational programs, and convincing them to work with complete strangers from other courses rather than their friends created a reflection of the real world in which we rarely choose who we are going to work with. However, the different backgrounds created some difficulty: we expected a lower level of engagement in ideas for narratives by the design students in relation to the journalism students for example. The workshop format tried to respond to these problems successfully. Finally, the different skill levels of students reflected another difficulty from the real world, since each student's working experience differed. A multidisciplinary practice was reached during the time of workshop. Some projects were mainly completed by students of one particular course, but in the end the best projects were of those who worked better on teams and achieved the best solutions."

Final prototypes

> "Considering the fact that this wasn't an easy challenge - even in the newsrooms it is with great difficulty that the type of journalistic object required in this workshop is developed - and looking at the results this becomes obvious. I would imagine that the imposition of themes closer to students' reality, although it could seem less interesting, could lead to better final results. Finally, some of the ideas were too ambitious in terms of journalistic production and that was disadvantageous for the students."

Workshop learning objectives

> "The workshop went well. Multidisciplinary skills in multimedia content production don't work if made in a silo. It is ideal for a team to be aware of how each part of the process occurs (comes together). Having the students from varied areas collaborating together in the many different parts of the process gave them a more realistic idea of the reality of these types of content production. In time management, production and post-production or final outcomes, we noted the immature behavior of allowing everything to be completed at the last minute, which demonstrates a lack of understanding of the way in which this type of content production works. This happened but not for lack of advice from the teachers. With more students experience in these types of exercises, planning and time management would work better."

Pedro Monteiro made other relevant observations such as: some projects that didn't follow the Expresso.pt guidelines were surprisingly innovative; in general the projects didn't include enough interactivity; more fundamental theoretical knowledge on information management should have been verbalized by the students; better argumentation of decisions about the presented narratives, as well as about the chosen sources of information and news, should be clearly stated; the influence that students' values and judgment have on the project format and how evident they become in the news and narrative pieces they create; avoiding leveling of news content, since hierarchy in the content structure can enhance communication; difficult access to information sources and being recognized in a journalistic role.

Results

Survey Results

From the 68 students 54 (79,4%) answered the 11 questions survey and open questions from which 46,3% were women (N=25). From the 54 answers, 44,4% correspond to Cinema students (N=8) and Journalism students (N=16) and 55,6% correspond to Multimedia design students (N=30). The mean values indicated (M) are relative to a 0-5 scale. From the general results, students were moderately receptive to the experience (M=3,22). Participants were grouped into five categories accordingly to how receptive they were to the experience and how successfully they performed during the workshop. This categorization further described leads the interpretation of results and concurrent data analysis of diverse aspects.

The disconnected (N=3): These students didn't attribute a positive value to the initiative (M=2) and they didn't felt prepared for the workshop (M= 1,75). Difficulties in collaborating and relating to colleagues from the same course on other teams were noticed (M=2,75), and this increased with colleagues from a different course on the same team (M=2,25), and worsened with colleagues from other courses on different teams (M=1). However, they were moderately motivated by the proposed theme (M=2,75), available resources (M=3), fieldwork (M=4) and project completion (M=3). They were less motivated by the lack of competence from other team members (M=2,5) and their lack of availability (M=2,25). These students suggested that better communication among colleagues from other teams, more time for project completion and a theme that interested the all team could avoid discouraging some of the elements of the group (journalism in detriment of design and cinema).

The discouraged survivors (N=15): These students who were moderately receptive to the workshop initiative (M=3) felt somewhat prepared (M=2,5). They were moderate in relating and collaborating with colleagues from the same course on other teams (M=2,53), better with colleagues from different courses on their team (M=2,93), and below average with colleagues from other courses on different teams (M=1 53). These students were receptive to multidisciplinary work. They were moderately motivated with the theme proposed (M=2,6), available resources (M=2,8), fieldwork (M=3) and less motivated by the competence of colleagues' on their team (M=2,26, their lack of availability (M=2,13) and lack of focus on project completion (M=2,53). These students suggested that more training in the use of techniques would have helped students from different courses to accomplish the final work. They considered it a relevant real world working experience. It was suggested that more time for the workshop in the beginning of the semester and more students per team could improve the course.

The motivated survivors (N=15): These students were receptive to the workshop initiative (M=3) and moderately prepared (M=2,6). They are moderate in relating and collaborating with colleagues of the same course from other teams (M=2,4), colleagues of different course in their team (M=2,46), and below average with colleagues from other courses in different teams (M=1,66). These students have similar connection with interdisciplinary and multidisciplinary colleagues. They were motivated with the thematic proposed (M=3,66), available resources (M=3,33), fieldwork (M=3,4), team colleagues' competence (M=3,86), and their availability (M=3,73), and project completion (M=3,66). These students suggest that more time and more people per team could be considered as well as an anticipated communication of the final project schematic could bring more effectiveness to the process. They appreciated the experience and the feedback from the teachers and the external observer from Expresso.pt.

The curious (N=6): These students were receptive to the workshop initiative (M=3,33), and prepared (M=3). They are moderate in relating and collaborating with colleagues of the same course from other teams (M=2,50) better with colleagues of different course in their team (M=3,16) and below average with colleagues from other courses in different teams (M=2,33). These students are the most receptive to multidisciplinary work. They were motivated with the thematic proposed (M=3,16), available resources (M=3,50), fieldwork (M=3,33), team colleagues' competence (M=3), their availability (M=3,33) and project completion (M=3,66). These students suggest that more time for the workshop aligned with the beginning of the semester. As creating these type of narratives is central to their academic path they suggest that improved orientation about editorial newsroom and narrative structure given before the workshop could improve the format.

The motivated self-confident (N=16). These students were decidedly receptive to the workshop initiative (M=4), and reasonably prepared (M=3,20). They are good in relating and collaborating with colleagues of the same course from other teams (M=3,44) moderate with colleagues of different course in their team (M=2,87), and below average with colleagues from other courses in different teams (M=1,62). They were motivated with the thematic proposed ((M=3), available resources (M=3,25), fieldwork (M=3,25), below average with colleagues' competence (M=2,37), a bit better about their availability (M=2,68), and project completion (M=2,81). These students suggest that more time for the workshop aligned with the beginning of the semester with talks and seminars for the same purpose would benefit ideas and working flexibility. Final work dependent of inactive colleagues brought cooperation issues. They suggest that more viable thematic would be doable for the given timing and context.

In general, students suggest that more common activities between students from diverse background disciplines could go a bit further as well as more interaction opportunities with professional partnerships. Common theoretical lectures could help understand the different cultures of apprenticeship.

Discussion and Conclusion

The data gathered from observation notes, photos and video, during the various sessions of the workshop, was combined with the results of the survey, the feedback from the teachers and the observations of the external professional from Expresso.pt's editorial team. The mixed analysis produced allowed the team to draw conclusions based on the pertinence of these working environments for the development of a multidisciplinary culture and practice of design in the area of digital mixed media production. Several aspects were especially relevant in the results:

- The participants' awareness of the need to collaborate in multi-disciplinary teams and the way in which each discipline contributed to the final product.
- The participants' recognition of the skills required in the professional environment of an integrated newsroom, as well as its editorial constraints, to produce journalistic content for publishing in a digital, multiplatform reality.
- The ability of participants to prototype a diverse range of design solutions for digital mixed-media content, incorporating features from social media, rich visuals and video, a design focused on mobile interaction and the capacity to produce an analytic perspective on the final solution.

The results were a clear indication that the initial perceived deficit among the multidisciplinary practices of multimedia design, journalism and cinema in higher education was real, but more importantly that it is necessary to increase collaboration between disciplines and integrate "real world" scenarios in the resolution of design problems at an academic level, namely in design and the fields related to digital mixed-media publishing.

The goal of the present educational experience was the development of a transdisciplinary approach to digital multimedia design education. Through an integrated process, difficulties and aspects for improvement were identified. From the faculty notes, the comments of the editorial member of Expresso.pt and students survey results it is possible to infer the following implications:

- Promote the collaboration and cooperation between students that are unknown to each other and coordinate student team skills;
- Provide a multidisciplinary team-working experience in an integrated newsroom that allows students to explore their creative capacities and gain experience with the current digital platforms, content production tools and publishing;
- Develop the capacity to conceptualize and to create mixed media products for the digital, social and interactive environment of mobile devices.
- Implement design thinking and design decision-making in alternative and new media, while working effectively as part of a multidisciplinary team for the analysis and evaluation of proposals and solutions in multidisciplinary and shared context.

Further suggestions for future research and improvement of a methodological approach derived from the present teaching experience:

- Integration of students from the same educational level in teamwork.
- Provide introductory sessions about multidisciplinary teamwork, organization, balancing of the distribution of tasks and use of time for task completion.
- Require more editorial work and assure that each team has access to relevant information for specific group themes.
- Debate fundamental theoretical knowledge and develop students' understanding of the importance of discussion and compromise in decision-making.
- Motivate students' awareness of the vocabulary associated with different disciplines as well as the development of a shared language on each team.

The above-mentioned suggestions can better prepare the students for a practical curricular experience of multidisciplinary collaboration in digital multimedia design.

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The case for greening the fashion education classroom across the curriculum

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ABSTRACT

This paper contributes to the current debate as to whether sustainability should be taught as a stand-alone course or be integrated across the design curriculum as a means of enhancing the overall learning experience. Fashion and design teaching is increasingly moving towards a multi-disciplinary approach based on the understanding that these sustainable practices impact on local and global economies and the environment. Yet, the redesign of the fashion curriculum has seen mixed success and questionable impact on imparting relevant knowledge by randomly inserting sustainability topics in the curriculum. Using a case study approach, the paper reports on the holistic integration of sustainability into a fashion course focused on marketing fashion concepts using a sustainability workshop containing a series of student-led exercises. This was premised on acquainting students with key issues underlying sustainable fashion, their implications, the need for change and the knowledge and skills to effect that change – in this case professional communication skills. In addition, sustainability issues covered in the workshop were threaded through each subsequent lecture within a 14-week, semester-long fashion communication class in a Hong Kong higher education institution at undergraduate level. This learning was also sustained by ensuring that the students reflected on, and shared their takeaways from the workshop based on the outcomes of in-class exercises using an educational social media site as a form of blended learning with the intention of informing their future professional practice as fashion marketers.of the article. Rote learning is widely utilized in Asian education systems and gives excellent results (Li, 2005).

Experience from our classrooms show that to articulate deep creative concepts, in a fashion design context, memorisation techniques are not efficient. It is essential for students to be able to construct arguments rather than present already composed written arguments to enable them to liberate their creative potential.The purpose of this study was to examine the use of Pecha Kucha presentation style in a fashion design studio environment, instead of a traditional PowerPoint presentation style to explore students' abilities to increase concept presentation, articulation and communication skills. Students from class BAFDT5A were introduced to the Pecha Kucha methodology. Students also attended the Singapore Pecha Kucha Night and presented 4 times their collection concept over a period of 4 weeks. Students were also given an assessment form for peer review. Lastly marks were compared with the marks form the previous cohort and the results showed and increase of final semester marks to the highest bandings.The information generated by this study will be of value to Fashion Design lecturers working the School of Fashion, but could be applied to any design programme. The results could provide design lecturers with a concrete method that could ultimately improve students' oral presentations.

Keywords
sustainability, education, pedagogy

INTRODUCTION

The fashion industry has been heavily criticized in the public domain for its resource heavy, unsustainable practices being regarded as one of the worst offenders in terms of its unethical production practices systemically impacting on the environment, the economy and society (McDonough & Braungart, 2002). Excessive land and water usage, polluting and toxic production practices and the unethical treatment of factory workers, in addition to the generation of excessive garment waste by the hyper-commercialised, fast fashion system post-consumption have all been laid at the fashion sector's feet. In this sense, sustainable fashion refers to the system of production and consumption of fashion items embracing conscious action towards social advancement and environmental responsibility by fulfilling generational market needs across seven stages of the fashion product life cycle: research, design, manufacturing, merchandising, retail, consumer use, and post-consumer disposal. Here, the term 'sustainability' will be defined broadly according to the Brundtland Report whereby, 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs, ' (United Nations, 1987). Yet, it must be stressed that responding to and fixing the production-consumption paradox is still a work in progress (Fletcher, 2014). Many commentators believe that part of the solution to unsustainable fashion habits or mindsets and the way forward in 'unfreezing' them lies in enlightening producers, designers and consumers in terms of their values, attitudes and behaviours towards the production, creation and consumption of fashion through education (Kunz & Garner, 2011; Gwilt & Rissanen, 2011). As such, the fashion industry has entered a greening phase across the supply chain from retrofitting and material substitutions to the creation of eco-marketing messages. In view of this raised awareness on the need to encourage sustainable fashion practice, fashion and design teaching is increasingly moving towards a multi-disciplinary approach based on the understanding that sustainable activities significantly impact on local and global economies and the environment with positive results (Fearm, 2011). This paper intends to add to the current debate as to whether sustainability should be taught as a stand-alone course or be more integrated across the design curriculum as a means of enhancing the overall learning experience and as a way of changing attitudes values and behaviours amongst the influential youth demographic. This idea is premised on the belief that the educational experience can usefully operate as a means of awareness-raising amongst key demographic groups on key issues of vital concern to society and culture globally. Using a case study approach, the paper will report on the holistic integration of sustainability into a fashion course focused on marketing and communicating fashion concepts using a sustainability workshop containing a series of student-led exercises. This was premised on the professional need to acquaint students with key issues on sustainability, their implications, the need for change and the knowledge and skills to effect that change – in this case by using professional communication skills in application. The realistic learning experience was also sustained by ensuring that the students both reflected on and shared their takeaways from the workshop and the outcomes of in-class exercises on an educational social media site as a useful form of blended learning (Bonk and Graham, 2006, Friesen, 2012). In addition, sustainability issues covered in the workshop were threaded through each subsequent lecture within a 14-week, semester-long fashion communication class in a Hong Kong higher education institution at undergraduate level.

Current pedagogical practice

Sustainability is gaining traction on the educational agenda across the curriculum (Dobson, 2007) including the subjects of fashion design and fashion management in the form of 'sustainability literacy' enabling the student to critically engage with the social, economic and environmental components of sustainable fashion practices. Some critics have blamed the inaction of educators and academia to integrate sustainability into the curriculum as being at the root of the problem for an industry taking on graduates untutored in practices relating to sustainability and having a negative impact on the system itself (Palomo-Lovinski & Hahn 2014: 103). Recently, educators have realized that universities are in a good position to contribute to advancing the change toward a more sustainable society by imparting new values, attitudes and motivations in the curriculum to effect professional and organizational changes with new ways of doing and being (Ceulemans & De Prins, 2010; Ferrer-Balas et al., 2010).

In the teaching of sustainable practice educators emphasize the triple-bottom-line method embedded in performance objectives underlying design and organizational decision-making encompassing core environmental, social and economic considerations (Melville, 2010) in the measurement of effective organizational responsibility and successful business practices (Sherman & DiGuilio, 2010). Reflecting a global trend across the academy, students studying fashion-related subjects in particular are often not clear about their role in the sustainability agenda, being largely unsure about the positive impact they could have on the fashion system in realigning their creative output and purchasing habits to positively impact the on the triple bottom line (Fletcher, 2009). Often, environmental and ethical issues appear to be too daunting for students to engage with, or to solve resulting in a generic malaise on behalf of the youth demographic (Rowe 2002). Hence, students are often reticent about proposing workable sustainable solutions and articulating them in their classroom deliverables. This requires a paradigm shift in teaching approaches, as well as in content delivery. The one-way, transmission model (Collins and Moonen, 2001) of imparting cognitive knowledge in itself in the classroom is not enough to change this situation and needs to be replaced by a more transformative pedagogical approach. On the one hand, more effective teaching of sustainability in higher education should also be based on the "affective domains (values attitudes and behaviours)" (Shephard, 2008) given that this input would be critical in changing mindsets and emotional states as a precursor to longer lasting behavioral change on a professional and consumer basis. Whilst higher education should be geared up to imparting new knowledge, thereby enabling students to become critical thinkers, they must also be encouraged to become critical 'doers' and not just armchair commentators, especially in the applied, vocational disciplines of design and communication. In other words, the cognitive knowledge and attitudes acquired in the course of their education should be empowering and should impart key skills, competencies and beliefs that stimulate students to action in the role of critical change agents by encouraging them to embrace the mantle as ecological citizens. Students should be stimulated to connect with their lived experiences and directly apply this knowledge in their own academic work and also outside of the classroom in their everyday life as engaged consumers and citizens. The intent would be to make life better for an environmentally sound and ethically assured future for the planet in terms of their contributions as design and communication professionals, as well as consumers.

Some commentators believe that this shift in the successful take up of sustainability literacy can only be achieved with a radical change in teaching and learning methodologies in higher education from transmissive to transformative learning (Sterling, 2001) in a renewed educational paradigm moving from a focus on the delivery of cognitive skills based on knowledge content to affective competencies based on vales, attitudes and resulting behaviours (Shephard, 2008). This suggests that in order to sustain sustainability literacy, continuous learning can be usefully based on multi-modal spoken and written reflective learning experiences at tertiary level as facilitated in immersive, workshop-based, blended encounters and post-class Facebook reflections as a third space in the digital domain to discuss issues, clarify ideas, reflect on the input and refine the output as aligned with the core concepts on the issue of sustainability acquired in-class. Consequently, some commentators are encouraging a move away to a radical makeover by implementing the topic of sustainability more fully into the academic prospectus (Armstrong, 2011; MacVaugh & Norton, 2012) to impact on values, attitudes and behaviors. This notion is based on the belief that systemic changes in attitudes through discursive domains such as the education system effect significant cognitive, emotional and behavioral change (Dobson, 2007), rather than purely relying on punitive measures to change the way in which people consume things, as tends to occur when incentivizing people to recycle household waste, reuse bags or pay a plastic bag levy. Designers and communicators therefore should be educated to generate ideas and products that have social meaning (Leerberg, Riisberg & Boutrup, 2010). Realistically, to effect this scenario the teaching and learning approach should be both predictive and prescriptive (Margolin, 2007). On the one hand it should predict future outcomes based on empirical data, whilst on the other hand it should blend subjective ideas based on ethical directions for the future well-being of environmental and human resources, thereby mirroring the design process in action. In this sense, students should acquire key competencies and develop an idea of their individual aesthetic, yet at the same time should be able to contextualize that in their design response to societal needs. Education should therefore be actively preparing students in their potential role as change agents based on exposure to, and application of data sets and value judgments in their own work.

In pedagogic terms, these educational aspirations also find support in Schon's notion of 'The Reflective Practitioner' (Schon, 1983) adopting an understanding of design in context whereby design education is based on a reflective conversation that explores the needs, opportunities, prospects, issues and challenges and the ways that these can be met, accommodated and adapted to using principles in the design process. The basis of this reflection by the student is founded on a discursive engagement or conversation with the design setting thereby allowing the design in context to 'talk back'. It further enables the designer to reflect on the philosophy underpinning their design work – strategies and ethos, in addition to the problematic of the design process and its ultimate multi-leveled impact in a responsible and sustainable manner. Equally, this process is multi-modal involving the articulation of the conversation in both images and words (Leerberg et al., 2010). Yet, in response the redesign of the fashion education curriculum to incorporate ethical issues and sustainability in recent years has seen mixed success with questionable impact (Fletcher, 2014), often imparting relevant knowledge by just randomly inserting sustainability topics into the higher education curriculum. The general concern here is that the sustainability issue becomes mainstream across the curriculum, and is not just treated as supplementary to the core curriculum or as part of a routine checklist of prescriptive topics. The Fashion Communication course as case subject of this paper intended to remedy this shortcoming by introducing the fundamentals of sustainability and environmental consciousness in relation to the fashion industry sector early in the content of the course in the form of an interactive workshop and follow-up session both online and in class. Subsequently, this content was sustained throughout the course each week with a component reminder of the topic being woven into lectures and tutorial discussions throughout the semester.

Methodology And Teaching Pedagogy – Relevancy, Experiential Problem Solving And Application To Practice

This paper demonstrates an integrated approach to whole-person learning using a sustainability workshop adopted on an undergraduate level fashion communication course to introduce the topic that would be sustained across the course curriculum as a means of familiarizing the students with its complexities and ubiquity by contextualizing the issues across topics covered in lectures and discussion exercises each week from fashion history and fashion branding, to packaging and visual merchandizing, for example. In line with contemporary thinking about effective teaching and learning in higher education a student centered, participative or experiential learning approach is taken on the Fashion Communication course that is the case focus of this paper to maximize student agency in the learning process. Therefore, in teaching this course a student-centered, experiential problem-based design thinking approach was adopted by exploring the core elements of holistic ethical, political and socio-economic aspects of sustainability within the fashion communications environment, moving from exploration, to envisioning, fast prototyping, iteration, and post-reflection with the primary intention of enhancing students' sustainability literacy. This teaching and learning approach fulfilled the aims of appropriacy, experiential problem solving and application to practice as examined next. As students will encounter and be required to deal with complex issues of sustainability in everyday life and the future workplace they need to be well prepared to provide solutions to this in their own work. Hence, the workshop was set up to create experiential opportunities for sharing, reflection, discussion and action to create an environment for openness and multidimensional learning from facilitator to student; student-to-student and facilitator-to-facilitator. Each set of learning engagements, both inside and outside of the classroom, enabled the accessing of a deeper knowledge base typified as an extended learning journey in applying cognitive theory and communication competencies to practice. During the academic year, the course tutors completed 5 workshops comprising 50+

undergraduate students in each class representing an inter-disciplinary group across the arts and social sciences mainly of Hong Kong origin, in addition to Mainland Chinese and international students from Asia, Europe and Australia. Given the cross-cultural nature and the interdisciplinary nature of these participants the workshop was set up to explore the nuances, cultural similarities and differences relating to traditional attitudes and behaviours about sustainable practices.

Pedagogic Teaching and Learning Process: fashion sustainability workshop

The three-hour workshop was conducted by two tutors, both of whom are experts, respectively, in sustainable design thinking and fashion communication, thereby ensuring multi-disciplinary expert input, output and guidance. The format was input based on stimulus and guided discussion, with the two facilitators probing and encouraging engaged feedback for maximum learning engagement throughout the duration of the class sessions.

Firstly, a staged content approach to the fashion sustainability workshop was taken whereby student participants were initially asked as individuals to match up definitions to "green words" (Thomas, 2009) commonly used in sustainability discourse. This was followed by an open-ended group discussion session on personal sustainability behaviors, both in general and specifically relating to fashion consumption and post-consumption. Using semi-structured questions in a worksheet devised by the tutors, the discussion was conducted in group-based settings with summary feedback required from each group that was collated and related back to the class via an allocated group spokesperson. The tutors commented on the summary feedback from each group spokesperson by validating insightful commentary and further probing some of the ideas presented by the student group to establish deeper engagement, more critical thought and relevant application where needed. Then, each tutor summarized the findings of the groups as a whole before moving onto the next section of the workshop as a way of ensuring that the entire class had absorbed the main discussion points at this stage of the session.

To differentiate and extend the input in preparation for the final class activity of creating a communication campaign to launch and promote a sustainable fashion brand, and to further stimulate debate, all of the student groups were shown three advertising campaigns promoting sustainable fashion from leading global brands and one established sustainability brand, namely, H&M, Levis and People tree respectively. These advertisements were shown twice to enhance viewer comprehension, followed by group discussion work using guided questions focusing on the effectiveness of the advertising message in communicating its point both visually and verbally. This part of the activity included having the groups focus in their discussions on the clarity of main message, its persuasive potential, the intended audience and the resulting action it required, in addition to the overall engagement with the brand that it actually engendered. The final piece took the form of a design challenge to devise an advertising campaign promoting sustainability for a mythical fashion brand. This in-class, group-based exercise was initially started in class with tutor guidance and subsequently had to be completed over a week-long period by posting the output on the dedicated class Facebook site, in addition to reflecting individually on what they had learned from the workshop as whole. The tutors commented on the Facebook draft submissions from each group highlighting effective output and providing suggestions for improvement as needed.

Findings and Workshop Outcomes

The situated approach to learning enabled the instructors to enhance the pedagogic experience by staging the development of knowledge from inculcating an understanding of the basic terminological usage relating to sustainability to encouraging self-reflexive knowledge about students' involvement with, and views on sustainability in everyday life plus professional contexts stimulating the professional application of subject content to professional communication practice in the promotional campaign exercise and follow up reflection and sharing one week later.

Employing an immersive, three-hour workshop format enabled the instructors to critically engage students on the subject matter of sustainability that is not yet a central part of their learning experience or their professional and lived agenda, both pedagogically and personally. Often, the complexity of the subject of sustainability operates as a barrier. So, by demystifying that in workshop exercises in providing guided cognitive content that can be reflected upon to elicit emotional responses can subsequently emerge as effective behavioral change. As one student said, following the green word matching exercise.

> These are all very action-type verbs and they offer the consumer different options to really do something. It really is complicated, but once you know what each of these words mean and what actions can be taken it is actually possible to make a change.

The benefit of exploring new knowledge both individually, in peer groups and in class discussions also enabled the various touchpoints of learning to be activated for individual students working at different paces in the second language classroom thereby enabling them to clarify definitions and verbal meanings throughout the workshop (Peirson-Smith et al. 2015). Yet, despite a general feeling of optimism about the viability of sustainable fashion practices that appeared to develop as the workshop continued and even though the students became acquainted with the different words used in articulating the sustainability lexicon, once the in-class exercise had been completed and collectively discussed with model answers provided they acknowledged that if they did want to take action on the 'recycling' of their used and unwanted clothing, for example, but largely observed that it did not tend to happen in their community. Here they also lamented that they had no guidance on how to do it, nor did they have infrastructural system to take the relevant re- or up- cycling action. This appeared to be a significant source of frustration for many of the students in the class suggesting that the acquisition of cognitive knowledge can lead to an emotional response requiring a behavioral outlet. As one student observed:

> Now that I know it would be a good idea to recycle or up-cycle my clothes that are out of date instead of being wasteful and putting them in the bin as usual, but actually I've no clue how I do that here. Nobody tells you how and I don't see any government campaigns about it anywhere or any fashion companies doing it. So, now I think of it after this class discussion it's a real shame and I honestly feel a bit let down.

This critical engagement with the subject also emerged in the structured, guided discussion questions following the green word exercise and by building on the new knowledge that they had acquired to frame their sustainable fashion experiences. The intention of this discussion exercise was to get the students to personally engage with, and directly to share their own lived sustainable fashion experiences in the discussion groups. The outcome on the whole formed a lively group discourse resulting in the sharing of commonalities such as the fact that they did not recycle clothes preferring to throw them away when they were out of style or to pass them onto younger family members. In addition, they did not tend to shop in second hand stores or buy up-cycled clothing apart from 2 students from the cohort who did so to mark out their individual identity through unique styles or who valued the quality of clothing produced in another era. It became clear from the in-that depth class discussions that even if participants recognized the need for the fashion industry to become more ethical in its production practices and its human relations efforts that from a consumption perspective, that this type of fashion was meant not for them but for someone else, as one student typically noted:

> Now that we've had the facts about bad fashion production practices and how they abuse child about, an pay workers badly or pollute rivers in China with dyes I do think that fashion should be more eco-friendly in these many ways that we've seen and discussed. But, if you ask me would I buy fashion that is better behaved in this green way I would say maybe not.

The final part of the workshop focused on applying the cognitive knowledge gained from the green words exercise and the subjective, value based perspectives unearthed by the open-ended, critically aware group discussions about sustainable fashion consumption experiences to the real context of promotional communication. The in-class and post-class Facebook discussions following the viewing of advertising videos by three brands promoting sustainable fashion demonstrated a deeper understanding of sustainable fashion, its socio-cultural complexities, the responsibilities and the various forms that it inevitably takes in application. Despite this acceptance of the sustainability issues that need to be tackled the overall analysis by the students suggested a case of information overload, both in visual and verbal terms, with a resulting confusion in terms of what the real issue was and how to respond to it, especially from the Levis Waterless Jeans promotional advertising campaign. In addition, the cultural objections to not washing jeans in a post-SARS Hong Kong society geared up to equating cleanliness with health were apparent and reduced the appeal of the advertising message significantly for this situated demographic of viewers. Equally, the H&M 2016 Recycle your Clothes advertising campaign was considered to be too abstract and in the Facebook analysis the message seemed largely lost on the students who thought it was more about buying H&M clothes to be individually stylish, which they considered to be a largely Western aspiration disconnected from their own local culture. Finally, the People tree advertisement was considered interesting in terms of what the founder was trying to achieve in reversing unethical fashion production practices, up-cycling activities and fair trade practices, yet as the brand was not recognized or perceived to be available in Hong Kong then it was seen as being located too far away geographically and culturally from their own experience or purchasing habits.

Using the workshop format overall, followed by the Facebook discussions as a blended form of pedagogy, did not disrupt the course syllabus, but rather enhanced the learning and development outcomes enabling the subject to be introduced in a discreet way early in in the semester so that the instructors could follow-up and refer back to the key sustainability issues covered in subsequent lectures on various aspects of the fashion system. Whilst there was uptake on the cognitive knowledge acquired and the personal, subjective reflections about fashion consumption in their own lives, largely there was a sense of a disconnect amongst the student groups, especially following their viewing of the advertising videos whereby they saw this issue being "out there" and not always as their problem because it was too remote. Hence, the pedagogic tools were provided for knowledge acquisition, reflection and emotional connection as a first level of engagement and awareness raising on the issue. This did emerge in the post-workshop reflections of the students, who largely admitted that sustainable fashion was now in their minds and would change their perceptions as consumers in terms of the need to buy and the need to recycle unwanted garments post-purchase.

In terms of professional application to practice, later in the semester the core assignment consists of student groups working together to devise and launch a new fashion brand concept as a brand communication campaign. Significantly, 10 of the 13 projects had a sustainable fashion connected theme, either as a pure eco-fashion or accessories brand based on up-cycling, or as a sustainably produced brand with the capacity for consumers to recycle unwanted clothes, for example. In this sense, the cognitive and emotive components of the fashion sustainability workshop were also applied directly by the students in their own academic and professional work. Therefore, an acquaintance with, and understanding of environmental issues can find a positive application and reach a deeper level of understanding in group projects by working with an issue as an aligned topic across the course curriculum (Murray and Murray, 2007).

Discussion and Conclusion

This case demonstrates that when sustainability is approached as sustained content-based instruction (Pally, 1997) in a series of grounded exercises students initially embrace the new paradigm and its associated values driven by course content and delivery. Engaging with the subject of sustainability in the context of fashion production and consumption from different angles moving from subjective consumer engagement to the professional practice of critiquing and devising a communication campaign for a sustainable fashion brand concept allows connection with the subject both in cognitive and affective ways. Whilst a holistic grounding in sustainability knowledge should cover its impact across the board from culture and society to the economy and politics emphasizing the triple bottom line (Melville, 2010), the pedagogic focus should also be placed on activating affective competencies beyond pure cognitive ones as a means of effecting long lasting behavioral change via emotional connectivity with the subject and an associated value change in the shift from transmissive to trans-

formative learning (Sterling, 2001). Hence, analyzing and discussing the topic in class using guided questions from personal standpoint as fashion consumer creates this affective connection and develops a sense of stakeholdership (Shephard, 2008). It also confirms that student-centered learning approaches in the right immersive teaching and learning environment of a dedicated, tutor-guided workshop, followed by space for discussion, reflection and discovery enables students to consider their perceptions about sustainability and to express their opinions and ideas about the issue in a free and open way (Schon, 1983). Furthermore, participants acquire the capacity to apply this new knowledge and revised belief system in their own work, independently making sense of its value in the marketplace and become more aware of how to communicate that as part of the fashion brand differential paying heed to its impact on the triple bottom line.

This paradigm shift in thinking and behaving differently regarding sustainability also still occurs on a superficial level, especially where the socio-cultural conditions have not been predisposed to sustainable practices, nor have they been championed to any large extent by government or organizations in a significant way, as is the case in Hong Kong. Equally, whilst the students appeared to acquire new knowledge on sustainability and delved deeper into the topic during engaged discussions and independent research, they were also enabled to objectify the issues such as the poor working conditions of textile workers globally, for example, on the understanding that this constituted unethical practice and had to be remedied by governments and opinion formers monitoring, outing and punishing socially irresponsible fashion organizations involved.

However, the challenge is to ensure that this newly acquired knowledge is sustained and applied in everyday life (Gwilt & Rissanen, 2011). The initial responsibility for sustained knowledge content lies with the course instructor in terms of designing the course content and ensuring that in regular assignment consultations with the students that the subject matter of sustainability, in this case, is further developed and applied by the students in subsequent work throughout the semester and beyond the course itself.

However, the instructors still saw a disconnect between an awareness of these critical issues and a lack of application to their personal lives as consumers in practice due to a lack of trust and an absence of a systemic ‘roadmap’ informing participants how to recycle their discarded garments, as an example. As noted above, for the younger demographic often the issue of implementing sustainability becomes the elephant in the room that is just too large to tackle (Rowe, 2002). Hence, maybe thinking about the issue and the sustainability solution is not enough. The answer is maybe to be found in taking action via participatory, project based learning. The dissociation with sustainability as encountered in initial classroom discussions also highlights the paradox underlying fashion as eco-fashion in the sense that these students are a key part of the fast fashion market culture reliant as it is on the thrill of new and disposable garments and accessories at low cost with enormous environmental, social and economic consequences. Furthermore, they are seemingly not engaging with the issue of sustainable fashion and rather seeing it as being far removed from their immediate lived experiences whilst maybe even perceiving it outside of their remit regarding it as a huge problem that they alone cannot solve. A change in this disengaged stance requires the implementation of sustainability as a topic across the whole curriculum (Mcmillin & Dyball, 2013) so that students can join the dots across the subjects that they study to fulfill requirements for professional entry, as opposed to silo-ing it in their own minds as belonging to certain areas and as being too large for them to be concerned about.

Instead of sustainability being offered as an appendage of design or vice versa (Dewberry and Fletcher, 2001) student could be required to include a sustainable component in their final practice-based project as a direct follow through of ideas to action (Smart & Csapo, 2007) given that design and communication students “are often better off learning about sustainable issues in bodily ways than through abstract models” (Leerberg, et al. 2010). In this way, students are invited to start their journey as design agents (Margolin, 2007). The progress of students on the initial stages of this journey could also be mapped by requiring them to undertake a reflection in writing or in a focus group discussion encouraging reflective practice from the outset (Schon,1983) with the instructors at the end of the course to chart their progress in having gained and sustained new knowledge with application to their coursework and lived experiences.

Although it is a work in progress and not without its pedagogic challenges in terms of overturning current perceptions and inherent values, this progressive teaching and learning approach and student-centered pedagogic model offers small steps in the right direction to changing mindsets, value systems, emotions and behaviors of students and future professionals based on reflective pedagogic practices and participatory learning. As a transformative pedagogic method intent on enhancing the sustainability literacy of students this case study provides an important context for the incorporation of sustainability in professional fields such as fashion in a more strategic and sustained way.

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The states of openness: an educational perspective on design practices

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ABSTRACT

We are living in an era of open source. Borrowed from software developments, open source as a concept term is now gradually associated with design and architectural practices. Within its broader aspects, it responds to the needs of change varying from the organizational structures of design groups and institutions to authorship of designers and the rights on their products. We argue that the principles of open design could –and even should- be embraced and harnessed not only in professional practices but also in the field of design education. This requires an acquaintance and the familiarity with the fundamentals of open design as well as the ethical, political and socioeconomic circumstances surrounding the issue. In addition, convenient environments should be created for the students to be involved in and deal with the various parameters of open design such as co-authorship, derivation, public domain, along with the design (collaborative, co-creative, participatory, transdisciplinary) and production (digital manufacturing) possibilities. At this point, further questions arise: How will the education of design actors be formed? How will the uniqueness of a designed object be evaluated? Pursuing a critical evaluation of openness and its applications, this study further aims to open the way for examining such questions for future researches along with conducted studio and project practices. Here we will reflect on our own experiences in conducting projects and workshops in the realm of academia, where we position the concept of open design as the major focal point to be facilitated in the design processes.

Keywords
open design, co-creation, design education

INTRODUCTION

A Critical Review Of Open Source And Design

Although it is historically evolved and thus linked in the field of computing through the pioneering developments of Free Software Movement in 80s and Open Source Initiative of 90s, open source is now surpassed its originated field and it is gradually conquering today's design culture and production environments. Designer and the founder of the openp2pdesign platform Meninchielli, points out to the transformation of open design practices, in which he was engaged since 2005, and states that disconnected singular projects are replaced by this new ecosystem, which is dominated by holistic approaches, and network based collaboration. According to him, open source, although not mainstream, is definitely not an underground concept anymore (Meninchielli, 2011). Today, various institutions as well as renowned organizations engage with open design in an increasing intensity. As examples, there are many start-ups like Paperhouses or Opendesk who have established their business plan according to open design models. Some architectural firms including world-renowned UN Studio are inclined to convert their organizational structures in accordance with open design principles. MOOCs are opening up the courses given in the top universities to the rest of the world. Such an environment in design practices and education deserves an in-depth look for seeking the further possibilities and preparing the future challenges. We argue that the principles of open design could –and even should- be embraced and harnessed not only in professional practices but also in the field of design education. This requires an acquaintance and the familiarity with the fundamentals of open design as well as the ethical, political and socioeconomic circumstances surrounding the issue.

As an introductory basis, it is aimed to provide the reader an overall understanding of this emerging and possibly paradigm-shifting approach; thus this section is devoted to the precedents of open source and open design in two sub-sections: open source precedents for reframing the legal framework, conceptual precedents of open design practice. This flow is planned to enable the reader move on towards the potentials of open design in design education through the emerging questions from these sub-sections.

Open Source Precedents For Reframing The Legal Framework Of Open Design

When the concept of open source was first borrowed from the computing technologies and implemented into the fields of design as a tool and a culture of thinking and communication towards the end of twentieth century, the first task was to adapt its main principles into these disciplines. According to these principles, a software is considered open, only if it allows a cost free re-distribution, access to the source code, attribution to the first author, derivative modification, while making no discrimination between people, groups and disciplines, being objective and not restricting other software with the license.

Concept >> [Programming] >> Source Code >> [Compiling] >> Software/Program/Application >> [Distribution] >> End Use

Concept >> [Designing] >> Design Documentation >> [Manufacturing] >> Embodiment >> [Distribution] >> End Use

Figure 1. Open source design syntax from 1999. (opendesign.org/odd.html, 2015)

In this flowchart, the accessible, modifiable, re-distributable source code finds its correspondence in the field of design documentation (Figure 1). The first step of open design is the sharing of the design documentation with the same software extension as it is produced with and not with a read-only file format. When the source code is replaced with design documentation, one of the first measures for the degree of openness is the accessibility of it. However, as we can see in the chart, unlike software, design is embodied/materialized and exists in the physical space. Although the parameters have named differently and the outputs are contradictory to each other as being immaterial and materialized, the structure of flow remains the same. This contradiction in the process of translating open source principles to open design is critically engaged with the issues of protection of rights and patenting. Various open licenses are applied in software development such as GNU/GPL or BSD, however to protect and share the design products, a more fulfilling and inclusionary method of licensing has been needed in creative fields to encourage designers for shifting from all rights are reserved towards 'some' rights reserved models.

At this point, Creative Commons (CC) as an independent and non-profit platform proposing alternative licensing infrastructure, acts as a precursor for open source to become a widespread culture in creative fields. As of 2014, the number of works shared with CC licenses exceeds eight hundred and eighty millions. Thinking about the wide field of effect open source culture has reached, it will not be inaccurate to argue that the clear interface licenses are presented with has a positive influence on this striking number. The percentage of CC licenses according to the degrees of openness is illustrated in Figure 2. By this structure, the owner of the work can easily –like choosing from à la carte in a restaurant- ensure the preferred rights to be reserved.

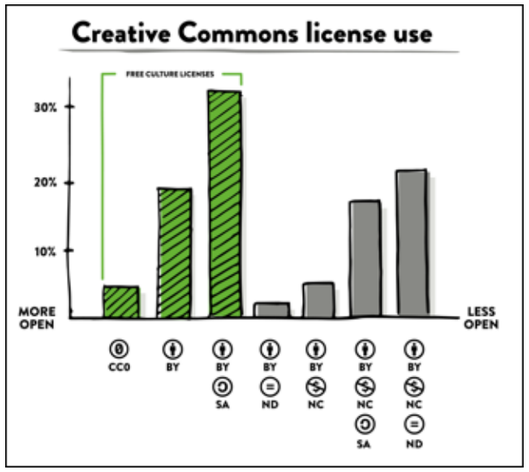


Figure 2: Creative Commons licenses categorized by their degree of openness and percentage.

The direct connection between the authorship and the protection of rights defines another measure for the question of 'How much open?' Today, the rights which designers have over their works is as diverse as it has never been before. This diversity brings forward the possibility of reconsidering the position of the author, which as Roland Barthes argues, is a constructed, modern figure (Barthes, 1977). Since the work can be open to modifications and derivatives, it is difficult to argue that the first hand producer/creator and the user can be separated with clear lines while there are constantly new authors producing new works. However criticisms of Barthes expressed with arguments like 'The explanation about the work is always sought in the man/woman who produced it' and 'classic criticism never put importance to reader, the author is the sole actor of literature', finds a new platform in open source principles. So much that, under these circumstances, the discussions on 'how' the work is developed gains more significance against the ones of 'by whom' it is produced. When the focus shifts from the author to the work or the process itself, a critical threshold in the criticism of architecture and design practices as well as their educational structure emerge. The work in circulation obtains beyond a characteristic of a mere case study by becoming an object of discussion, thus it opens itself to interpretation. Barthes concludes his article with the following statement: 'The rise of the reader occurs at the expense of the death of the author' (Barthes, 1977). However, it can be further stated that the principles embraced by open design does not eliminate authors but they might fragment, multiply and keep them in discussion.

As another consequence of reframing the legal framework around copyrights, open design provides a fertile ground for the emergence of a new vocabulary which is then turn into design actions: re-distribute, share alike, derivate, modify etc. This whole new package of actions inevitably affects the process of constructing a designer persona. Long-extolled ethos of the authorship, therefore the authenticity in creative processes is now requiring further investigations. In an environment where design actions are facing changes in accordance with fresh production methods and culture, additional and adjusting methods are needed in design education. Since open design does not have an established concept framework or a manual to follow, we can start learning from the

emergent practices and try to adopt and modify their techniques into design education. Following these propositions, it has been aimed to trace back and learn from alternating experiments of open design among a selection of contemporary practices as well as pre-internet precedents of such practices.

Conceptual Precedents Of Opening The Design Practice

Although the term was not coined back then, first examples of open design can be dated as early as the early 20th century, when Moholy-Nagy used the means of telecommunication to transmit design instructions or advertisements of pre-fabricated houses to be ordered and self-built were published in newspapers in USA, among many others. These illustrate the early fractions in the closed structure of the design work, where design information, documentation, knowledge is partially or wholly given out or the designer renunciates from a perfect execution of his design.

In the mid 20th century, we encounter publications like Papanek's Nomadic Furniture (1973) or Design For The Real World (1973) where he both illustrates design documentation more openly and calls for more collaborative, appropriate and socially responsible modes of design (Figure 2). Similarly, in 1974, Enzo Mari publishes his Autoprogettazione? catalogue, which contains drafts -technical drawings- of nineteen domestic furniture, publicly available for manufacture. On a different context and scale, the proposals for ambiguous, adaptable open works instead of pre-defined forms by European architects such as Habraken or Friedman also foretell a paradigm shift in practices of design and architecture.

Today, Dan Hill defines the transformation of design and architecture practices under the dynamic and fragile economic circumstances through the actors of the monopolistic order (Hill, 2012). He suggests that the old static structures, which are defined by the surnames of their founders such as Smith, Cooper, Taylor, Potter fail to adapt to collaborative, multi-¬actor global contemporary practices and points to the dissolution thereof and the beginning of the pursuit for alternative values, motives and models. This pursuit is cynically illustrated in Rory Hyde's book 'Future Practices' (2012) through the New Architect's Atlas, where the contemporary conjuncture of architectural practice is questioned (Hyde, 2012). The architectural office is displayed as the melting pole along with the formation of new design countries and continents through the convergence of the emerging specializations. Here, 'The Solo Genius' is a melting iceberg to be dissolved entirely in the near future (Figure 4).

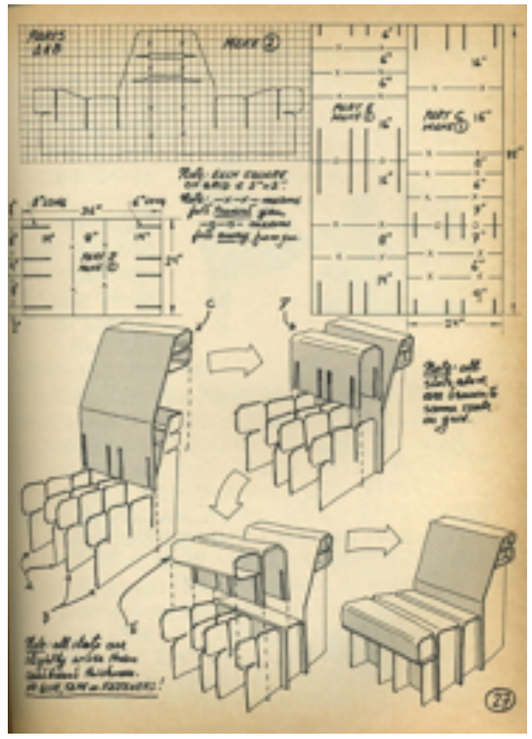


Figure 3: Papanek's Nomadic Furniture, 1973.



Figure 4: The New Architect's Atlas. (Kallaila and Park, 2011)

The monopolistic order of design distribution in the last century finally became challengeable via Web2.0s participative and social nature. This shift called forth creative enterprises to re-discover their habitual, humanistic and communal qualities. Inevitably the corporate actors are forced to interact with this current medium in its struggle for existence. Global design and architectural practices tend towards new research methods that yield to improved and fertile results to enhance the infrastructural, intra-¬institutional knowledge sharing. Here, we are encountered with the notion of open source as the main concern of this article as well as the primary response to the current pursuits in the realms of network culture, anonymous knowledge sharing platforms, expansion of design documentation and processes and online collaborations integrated in our daily lives as well as into the practices of design and architecture via Internet. The concept of open source relates to and enables us rethinking and reconsidering the notions of counter-¬culture with its pre-internet roots, DIY culture, critical approaches to consumer culture, social and ecological awareness, participation, democratization of design, user-¬focality, accessibility, sharing of design processes and re-evaluate them in current contexts and possibilities.

The alternative license structures are playing catalytic role in the realization of precedents in open design and architecture practices, ranging from furniture to buildings, from design processes to knowledge platforms. In this section, precedents such as Wikihouse, an open source construction set, Opendesk, a platform focusing on open source design in product scale, Knowledge Platforms, an initiative of UNStudio aiming to front the open source movement in architectural practices are being examined. These cases on one hand relate to the existing alternative licensing infrastructure and they refer to unique positions in strategies of openness on the other. Various comparative diagrams can be obtained when the cases are illustrated through the presence of openness to development, modification and reproduction as well as the accessibility of design documentation and knowledge (Figure 5).

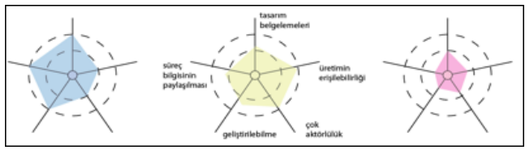


Figure 5. Diffent types of openness diagrams for WikiHouse, Opendesk, UNStudio (Curgen, H.C., 2015).

One of the precedent cases is Wikihouse, an open source construction project. Design documentations in this project facilitate the CC_BY_SA combination of the CC license infrastructure. According to this license, every stage of design is open for use and distribution under the conditions of referring the original author and using the same license while sharing. One of the major actors of WikiHouse project, Indy Johar (Partner, 00:/ Design studio), explains the starting point of the project in his interview with Rory Hyde:

"We have realized that production gradually withdraws from factories. We will see it diminished and localized. This post-authorship model, which we are still exploring, is about the open selection and execution of ideas than laying claims of a certain intellectual property or area of knowledge. When the digital technology meets the inspiration of 'making', production becomes much more rapid and collaborative [Johar, 2012].

The idea of WikiHouse and the open source production model it has developed can be considered as an architectural experiment. Every prototype developed in the network consists and assesses different outcomes of these open experimentations. Developer communities are the main actors of WikiHouse. Each community produces the outcomes in a web-based organization and on a local scale. It aims to design a habitable house, the services and systems of which are resolved according to open source design principles. WikiHouse construction patterns are open to use, modification and distribution, thus facilitate the possibilities of open source on a web-based platform, constructs the accumulation of information, generated in a multi-user environment due to its nature (Figure 6). Although the use of digital manufacture technologies increases the accessibility of the project; intolerance to material variation, the genetic affinity of trials, the dimensional and scalar limitations of tectonic expressions as well as the use of proprietary structures of the software the design is prepared for production, present themselves as unfavorable qualities.

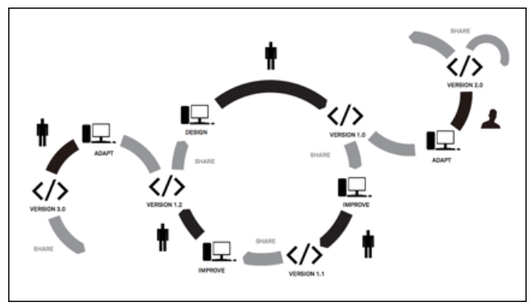


Figure 6. Diagram for production process in Wikihouse (WikiHouse, 2015).

Everything in the platform for free download has been licensed by Creative Commons CC-BY-NC options. This means that it is open for any use unless it is commercial. For commercial purposes, users are encouraged to contact with designers and apply other licensing agreements. The authorship is shared among designers and users on the platform. Thus it opens up a liberating working area for designers as an independent communication network of the possibilities of Web 2.0.

The third and last example is selected from the inside of the architectural global practice. Ben van Berkel, founding partner of UNStudio has announced the launching of Knowledge Platforms, which links the office with open source culture: "I sometimes come to think of that we all live in iPhone 5 phase, but the architecture is still in the Walkman phase." (Berkel, 2014). Berkel has a certain affection by the fresh start-up tech companies based on open



Figure 7. Opendesk instructions (Opendesk, 2014).

source strategies, those he came across with while he was working as a teaching scholar in Harvard. According to him, they are obliged to move from a network practice - the United Network practice of UNStudio - to a more knowledge-based organization [8]. Through Knowledge Platforms, Berkel and his office aim to learn both from internal and external knowledge sources and to expand the research fields of architecture in terms of spatial, cultural and organizational qualities (Figure 8).

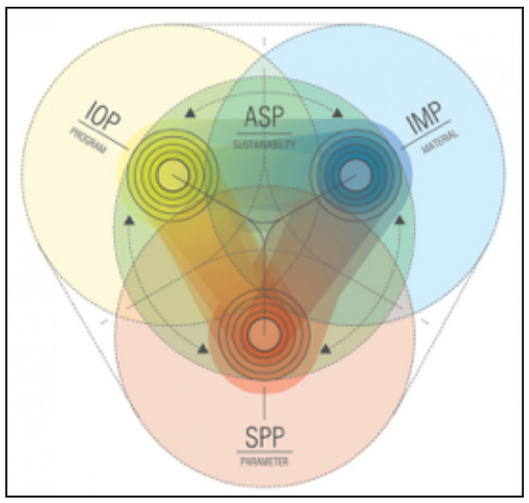


Figure 8. Knowledge Platforms diagram (UNStudio, 2014).

On Knowledge Platforms, there are four main categories associated with innovative materials, sustainability, smart parameters and creative programming. However within those channels any architectural drawing, system design or diagrams are shared as read-only files in jpeg or pdf formats. Moreover they are embedded in written reports of the projects and cannot be downloaded separately. Neither design nor the research of design has been licensed in an open format. Thus limitations of the content's circulation both in legal and professional worlds are questionable. The content remains unavailable for the practical world as processable knowledge sources. Meanwhile it would be useful to remember that global practices like UNStudio have very close relationships and agreements with their clients in terms of sharing the authorship. However even the modest contribution on sharing expertise and knowledge is still valuable since this attempt comes from one of the most significant actors of the global design practice.

The Location of Open Design Culture in Design Education: Two Experiments

It is quite obvious that instances and practices of open design gained a momentum both quantitatively and qualitatively. How much the common education perspectives in design and architecture education complement these practices is, on the other hand, still a burning question. We argue that we live in fragmented times in design education as in many domains of life. A conventional structure of design education consists of -is fragmented into- four years, eight terms, tens of different courses and projects. Almost in each instance, students are put into position of starting to design from scratch to reach a unique and sophisticated form (Türkkan and Erdem, 2015). The concentration of the design strength on form-finding might cause issues such as context, details and social aspects to go unnoticed.

Today, grand discourses and author-ative-designers are gradually replaced by more flexible, collaborative and continuous practices. Consequently, we are faced with the conflict, where design criteria sets meaningful in current education paradigm might not correspond to the professional practices entirely. On such asynchronous circumstances, open design practices can provide a critical foundation for the formation of transmission. Instances/examples we have mentioned in the first section could be 'giants' on whose shoulders we stand on in more sustained and regenerative implementations of design and architecture. However, an instant fraction from orthodox methods seems improbable. Thus, a gradual integration of open design examples and projects developed thereon, into the design curricula through extracurricular work -workshops and summer practices for instance- appear to be a more realistic strategy.

In the light of the previous discussions, we would like to examine two separate experiments conducted in order to integrate open design principles in design and architecture education.

The methodology for these two cases can be considered as action research:

> 'Action research (AR) is an orientation to inquiry rather than a particular method. In its simplest form it attempts to combine understanding, or development of theory, with action and change through a participative process, whilst remaining grounded in experience' (Willig and Stainton Rogers, 2013).

The designer/student starts to work on an existing project instead of undertaking a quest of designing an exceptional form. The project is evaluated and prepared for manufacture -modified to fit contemporary production possibilities if necessary with the engagement of the instructors, which makes it a participatory process. First versions are re-evaluated, interpreted and versioned. This marks the formation of a cyclical flow where the designer can focus her energy on non-formal characteristics of the process, instead of one-with-a predefined-limits of beginning and end.

Experiment One: Never Ending Bench

The first example is the project called 'Never Ending Bench' which was realized in Istanbul Bilgi University Industrial Product design department Summer Practice course in 2015.

The Never Ending Bench by Félix Lévêque is one of the furnitures supported by and published in OpenDesign Contest (2015), composed of several pieces of wood that interlock. There are four key components that define the slope and the balance of the bench. The other parts are not scalable, have limitations such as the size and strength of the material. The dimensions of the slots are to be adapted according to the thickness and width of the material used.

The project started an evaluation and re-drafting of the product by six different student groups. First an initial version with no modifications is manufactured and the strengths and weaknesses as well as possible modifications are identified. Through mock-ups and critique sessions, the models have reached their final configurations which then are manufactured using CNC milling -as the initial idea has foreseen. Final products are versioned as 2.a to 2.f and put in use in the Faculty of Architecture in Istanbul Bilgi University.

One of the important outcomes of this process is that even very minute descriptions/documentations of open design projects require a certain degree of modification and manual labor, which might not be present in the initial illustrations of the products. A second yet still pivotal realization was that a combination of digital and analogous manufacture results in much more stable outcomes.

Experiment Two: Reprojecting Autoprogettazione?

The summer practice of Istanbul Bilgi University Product Design students has focused on Enzo Mari's Autoprogettazione? (1974) Project, which was one of the earliest yet finest examples of open design. Mari's design philosophy here does not focus on the finished product but sees design as an open process. His catalogue of nineteen domestic furniture with their minute documentation was published and made public for anyone to acquire and execute. Mari writes that these products can be personally manufactured and used independent from the industry and bodies of commerce (2002). He only asks different versions to be photographed and sent to his studio per mail.

His main criteria is quality above all. As a strategy against the pressure coming from the abundance of consumer products, he proposes an understanding of design through not only by the introduction and distribution of end products but also their processes (figure x). We understand that it is not solely a formal quality he is after, but the generosity in means of design methods and the incorporation of a certain design equality (Autoprogettazione Revisited, 2009).

Mari's furnitures, designed with simple, standardised pieces and joints are characterized with their ease of manufacture and cost reduction. Our students re-projected and modified these open design objects with the contemporary production methods (such as CNC). One of the main challenges in this project was the reevaluation of products designed for manual labour and manufacture to digital production. The elimination of the use of hammer and nails called for a revised planning of production and assembly. Optimised nesting and interlocking systems also enabled the reduction of raw material, joint elements and hardware. As a result, six different products from the catalogue were manufactured and exhibited in a domestic environment as versions 2.0. These furniture are then re-assessed and reproduced (thus versions 3.0) for a second exhibition 'An Open Design Experimentation: R-Autoprogettazione?' in Istanbul.

The results show that open design projects can by no means be restricted to simple and literal applications of certain recipes. Even the most detailed design documentation fails to encompass all the necessary information. Therefore, in each instance, first the existing project has to be analyzed, modified according to needs and production tools and even revised after execution, which actually corresponds to the concept of versioning in open source terminology.

Discussion and Conclusion

In each case students are encouraged to adopt the role of a designer-critic. The beginning question or the departing point has been shifted from "designing a chair" to "critically dealing with a designed chair". The pressure of creating a one of a kind design product has been eliminated in order to test their initial designing behaviors. Instead of creating from the scratch, students are expected to modify, to variate, to redistribute the design. Each team came up with different approaches and they are also encouraged to re-interpret their initial products' final look by applying diverse finishing techniques. This experiment allowed students to evaluate an open designed product -or adaptation of a precedent to open design principles- not as a mere example of a case study and it enabled them to critically engage with a designed object as active participants.

We believe that open design practices might play a transformative role in the context of design and architecture education. We are in the pursuit of an alternative model where the designer develops his unique design strategy through an active learning process and by deconstructing, tampering, re-projecting and reverse engineering given examples. In that manner, open design practices might be the harbinger of a new education paradigm, all concerns reserved.

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“I’ve become a cross-disciplinary interpreter” Experiences of open learning within a multidisciplinary collaborative design context

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ABSTRACT

Open working practices are increasingly encouraged across the domains of design, business and academia, with concerted efforts made to enable contextual learning and facilitate knowledge exchange between multi-disciplinary partners. Despite the understanding and acceptance of this way working, challenges to collaborative practice exist widely.

This paper aims to explore experiences of learning within a multi-disciplinary collaborative design context. In the same way that Chesbrough (2006) considers open innovation as ‘the use of purposive inflows and outflows of knowledge to accelerate internal innovation’, this paper asks how ‘open learning’ within a multidisciplinary collaborative design context can make use of those same flows of knowledge in order to realise value for those participants engaged.

Contextualised within a series of multidisciplinary design-led events in Scotland, emerging themes of learning are identified from across business, academia and design participants. Deconstructing the pedagogical themes, this paper questions how design can enable wider participatory education practices, with the aim of informing the knowledge and understanding of learning within a multidisciplinary design space.

Keywords
learning, multidisciplinary, design

INTRODUCTION

Open ways of working, including knowledge exchange and collaborative endeavors are increasingly encouraged across the across disciplinary practices towards increased innovation and sustainable development. Despite the understanding and wide acceptance of this way working, challenges to the practice of such collaboration exist widely. The translation of ideological paradigms and the sharing of practices inherent within each discipline can be challenging, hindering the creation of new knowledge (Hepburn, 2016).

As discipline practitioners, and as people, we are increasingly called upon to collaborate with others. This might be people familiar to us, those with whom we have a working relationship developed over time. However this is not always the case. We might also need to work with people whose working practices are in conflict with our own, whose lived experiences are far removed from our own and whose values are at odds with our own. This need to collaboration outside our usual boundaries can be understood as ‘open’, enabling wider participation and juxtaposed to the traditional ‘closed’ practices of internal working.

Chesbrough considers open innovation as ‘the use of purposive inflows and outflows of knowledge to accelerate internal innovation’. In this way, organization’s that engage in an open way gain value in the contributions from external resources, including knowledge, processes and experiences; the ‘inflows’. The ability to collate and leverage these connections enables an enhanced distribution of knowledge that can be used to develop improved working practices and create new business opportunities; the ‘outflows’.

The concept of collaboration can be linked to contextual learning and within organizational learning the benefits of knowledge transfer and knowledge exchange have been identified. Piller and Walcher (2006) recognize knowledge as a source of competitive advantage while Brown and Morrad (2013) support the view that SME networking activities are critical to the acquiring of this new knowledge. Collaboration is inherent within the design discipline where it is recognized that the design process is a creative social process involving teamwork, in which each individual contributes shared experience to the common goal of designing a product (Bucciarelli (1994, Sanders & Stappers, 2008; Koskinen et al., 2011) while Cross (2007) states that design knowledge resides in people, processes and products.

Building on the role of the social, interaction between participants is recognized as a critical element, whereby those engaged shape and transform both themselves and the environments within which

they work (Lee-Kelley et al, 2004). Similarly Du Plessis (2008) and Nonaka et al, (2000) refer to the capture of knowledge on collaborative platforms, arguing that the success of knowledge capture in this context can be attributed to the fact that knowledge transfer is a social activity.

Frequently, collaboration is based around a specific challenge and aims to work towards a common goal or shared solution. The value of that collaboration is most commonly realized in that final outcome or emergent solution. While this is often used as a measurement for the success of a collaborative activity, little reference is made to the learning that takes place during the collaboration.

With this in mind, this paper explores experience of learning within a multi-disciplinary collaborative design context. Exploring Chesbrough's notion, this paper asks how 'open learning' within a multidisciplinary collaborative design context can make use of those same flows of knowledge in order to realize value for those participants engaged. Contextualised within a series of multidisciplinary design-led events in Scotland, four emerging themes of learning are identified. Deconstructing the emerging pedagogical themes, this paper asks how design can enable wider participatory education practices, with the aim of informing the knowledge and understanding of learning space within a multidisciplinary design context.

Open Innovation and Knowledge Flows

With its origins in business development and sustainability, open innovation describes the purposeful capture of knowledge from outside an organization (Chesbrough, 2003). Traditionally, organizational research and development was confined, or 'closed', within the departmental structures of a business and limited to the extent of knowledge and experience of that internal team. However as organizations adapt to new economic and social challenges, the need to harness and capitalize on new opportunities encourages movement beyond the existing structures.

Within Chesbrough's open innovation paradigm (2006), he refers to 'inflows' and 'outflow' of knowledge and this has been considered within a business context (Lichtenthaler, 2011). In this context, inflows refer to the flow of knowledge from sources such as suppliers, end-users and competitors and have a direct impact on organizational capacity, enhancing understanding and creating the conditions for development. Outflows refer to the output generated as a result of the inflow of knowledge, for example a new product or service informed by external knowledge and developed in response.

In response to the growing literature beyond a business perspective, Lichenthaler (2011) suggests a wider definition of open innovation that incorporates knowledge management, 'open innovation is defined as systematically performing knowledge exploration, retention and exploitation inside and outside an organization's boundaries throughout the innovation process' while West and Bogers (2014) redefine open innovation as "a distributed innovation process based on purposively managed knowledge flows across organizational boundaries". Each of these definitions aligns with an understanding that open innovation has the potential to move beyond the business domain.

Collaborative Learning

Based on the understanding that knowledge is socially constructed and enacted through the interaction and exchange of experiences, information and ideas, collaborative learning has potential to respond to multi-faceted challenges in a cross disciplinary way. By engaging multiple perspectives, experiences and ideas can be socially enacted, suggesting a participatory element. This is aligned with the belief that participation is critical to learning activities (Leidner & Jarvenpaa, 1995). From this perspective, the participatory nature influences a stronger contribution, enabling a better the learning experience. The shift towards an increasingly 'participatory culture' (Jenkins, 2006) and the resulting evolution of perspectives of value within learning contexts has significantly altered the practices of engagement. No longer is the teacher the master of knowledge and the learner an empty vessel waiting to be filled, but a more equal and reciprocal sharing and collaborative creation of knowledge is favoured, inextricably linked to social interaction and the democratization of knowledge production.

Collaborative learning combines diverse perspectives with the aim of illuminating and unpicking the complexities of interactions involved. On practical level, learning in this way can only be situated contextually. Taking form from the mix of participants engaged, the collaboration evolves constantly based upon the level and quality of interaction that takes place. It is though this interaction that the sharing of knowledge, skills and tools takes place, shifting learning from an 'individual solidary act' towards something more engaged and collaborative (Jonassen et al, 2006). This is supported by Carcasson et al, (2010) who state that each participant within a collaborative partnership has the ability to influence the social dynamics and the potential outcome of collaboration, shaping the process as well as the output.

Warburton (2003) recognizes the opportunities offered by collaborative approaches to learning beyond the subject matter in question. By being immersed within a collaboration, the practices and working processes of each individual member, and the discipline from which they emerge, are made explicit, creating opportunities to understand and bridge 'disparate discourses, traditions and methodologies'. In this way, the final output becomes less important; of interest is the experience and learning that occurs as part of the process of collaboration.

Learning Theories

Across the literature, learning theory within collaborative contexts is still under-researched, with no common approach adopted (Leach et al, 2013). In considering the learning theories that exist, Leidner and Jarvenpaa (1995) state that no theoretical positioning is dominant, rather the learning context, the subject matter and the participants involved will work to shape the learning style required.

Constructivist approaches consider a more adaptive and active model of learning and has a focus on reality as being socially constructed. Learning in this way is person-centered, with each learner working at their own pace to interpret the information offered in a way that is based upon their own understanding of reality and experiences. Here learning focuses on the exploration of multiple perspectives or contextualized learning (Jonassen, 1993).

Collaborative approaches that consider learning as a social process, one in which the interpersonal interactions of learners enables a more effective learning experience, build upon the theoretical foundations of Vygotsky (1978). By encouraging participatory practices, this model assumes that knowledge is created as it is shared. A critical element of this model is the value of participants' contribution, their experiences and knowledge and the impact this has on the wider learning experience of the group (Alavi, 1994). In collaborative learning situations, through conversations, discussion and debate, participants offer explanations, interpretations and resolutions of problems which lead to social construction of knowledge, as well as development and internalization of meaning and understanding (Alavi, Wheeler & Valacich, 1995).

More recently, a socio-material or social-cultural perspective has dominated describing learning theories that 'move beyond individual acquisition, representation and transfer, emphasizing instead how learning is embodied in dynamic relationship among people and their physical contexts' (McMurtry et al, 2016). In this way, learning is understood as a more relational process, engrained in the collective and emerging though the social relationships developed. Furthermore, these perspectives consider that the tools for learning have an explicit role to play in the learning activity that takes place (Leach et al, 2013). This theory is particularly interesting within the context of participatory design whereby the tools and methodology adopted are integral to the process of collaboration.

Research Setting

Four design-led events (chiasma) provided the context for this study. Chiasma are two and a half day, residential knowledge exchange workshops organized as part of large research project, Design in Action with the aim of exploring the potential of design as a strategy for growth in Scotland and each chiasma had a particular societal or economic challenge to address. Participants were recruited from across design, business and academia with a view to collaboratively developing new business ideas towards potential seed funding of £20,000.

Methodology

The study undertook a qualitative approach in order to capture and explore the experiences of learning within the chiasma context and included interviews with thirty-five participants (thirteen business participants; thirteen design participants and nine academic participants) with the aim of exploring and capturing their experiences of learning. The interviews were semi-structured as focused around key themes: the chiasma experience, networks and collaboration and innovation and reflection.

Data Analysis

All transcripts were thematically analyzed enabling the clustering of data, from which the experiences of learning began to emerge for each participant type (business, academic, designer). From there, it was possible to identify and themes across each discipline and the emergent inflow and outflow of learning.

Findings

Four key learning themes emerged across the three participant perspectives; interaction, experience, practice and reflection and these will now be discussed in relation to inflow and outflows of learning.

Interaction

Interaction emerged as a theme of learning for all participants. In the first instance, business and academic participants discussed the participatory nature of interaction and the resulting impact on how they engaged. The chiasma comprised of a series of intensive design activities including persona development, fast ideation and prototyping and lightning talks from experts. Each activity was designed to engage participants in a hands-on way and enable them to make meaningful contributions. For many participants, this level of participation was described a new way of collaborating, "There was no time for sitting back, we had to be involved from the start you know, get our hands dirty. It was miles away from what I'm usually like in a business meeting" (Business Participant).

This participatory interaction can be highlighted as a learning inflow. Identified as a way of engaging beyond the usual business and academic models of interaction, both participant groups remarked on the intensive nature of the participation and the ease with which they felt they could contribute to the activities due to the level of engagement required, "It was amazing how much we all shared during the first activities. It was so easy to be open and I learned so much about some of the people at my table. In my normal job, it might take us months or even years to get to that point of familiarity" (Academic Participant).

The learning of design participants was less clear in this theme. Many design participants were familiar with the methodologies used and felt comfortable in that space of interaction. However, some designers had never worked out with the traditional designer/client brief context and found the emerging dynamic enlightening, "It was challenging for me to not take the lead, as a professional designer I'm used to telling people how it should be, what they best idea was but I had to take a step back and share that responsibility" (Design Participant).

In terms of outflows and how the emergent learning might extend beyond the chiasma setting, this was most apparent in the sharing of individual knowledge and the shift towards a collective understanding. The high level of interaction enabled participants to share, understand and most importantly value the skills and knowledge of each participant as well as the potential contribution they could make to the collaboration, "We got to know each other really quickly, the tasks were fun and we relaxed. It meant that when we came to choose team members, you could quickly identify those people who thought the same as you, who appreciated or valued the same things" (Design Participant). The increased level of interaction created a rich dialogue, open to all contributions and each participant group identified this as a key contributor to the degree of openness, "…very quickly we moved beyond our job titles or what we did or believed it. We were people. I wasn't a business owner but a person, just like them" (Business Participant).

Experience

Experience in the chiasma setting was linked predominantly to the creation of an authentic learning context. There was agreement among participants that the exposure to multidisciplinary perspectives, combined with tasks undertaken as part of the collaboration (the design-led activities), created an environment conducive to learning and furthermore had impact on learning both at the time and following the chiasma. Again, the learning through experience, or learning by doing, was highlighted more strongly by the business and academic participants, who referred to engaging with the design methods and how this facilitated group formation; "the way of working, the design part I guess, really helped us to work though who we were as a team and what our USP was" (Business Participant). Design participants referred less to the experiential learning gained through engagement with tools and more towards the capture of experience and the broader understanding this provided.

This learning, related to the gathering of insights through the sharing of personal experience and storytelling was another significant inflow. In this way, participants were able to learn from multiple perspectives, increasing their awareness and appreciation of the wider disciplines within their team. This was apparent in the generation of a shared understanding of competencies as well as through a realization of the discipline specific skills each team member brought to the collaboration, "I learned a lot about the experiences of running a business. I hadn't encountered that level of sharing before, they were real-life experiences and quite unlike what I'd expect to read on the subject" (Academic Participant). This also extended to the role of the designer within the collaboration, "I realized that the designer was there for much more than decorating the packaging" (Business Participant).

Through making explicit the professional and personal competencies of individual participants, it became clear that this worked to manage expectations within the collaboration. Participants were both aware of people's expertise as well as where their own strengths lie in relation to others, "I felt that it was an engaging and challenging couple of days, exposing me to many different personalities and backgrounds in a short time period" (Academic Participant).

The collective learning that emerged was visible as an outflow in the final business ideas. This highlighted the learning journey for each group, illustrating how far the idea had progressed and how it had been informed by the experiences and interactions within the group. Furthermore, in the period after the chiasma participants had the opportunity to rework their pitch into a final proposal for seed funding. The applications submitted demonstrated the outflow learning that took place, making reference to the feedback given during the chiasma and in the subsequent iteration of the idea.

Practice

The inflow of learning through practice was visible as individual participants and as the collective. Individually participants developed a more cohesive understanding of their own working. Additionally, participants identified occasions when their contribution evolved beyond the current understanding of their role towards a new positioning within the collaboration. This was observed when individuals assumed roles within the groups and most notably when a design participant discussed how they had been called upon to act as a mediator between two other participants using their skills in a non-traditional way, stating, "I've become a cross-disciplinary interpreter" (Design Participant).

Learning around practice related to design, the application of design as part of collaborative activity and the role of design in a wider strategic sense. For the designer, this was linked to learning around articulation of the role of the designer and also how to consider design skills beyond the traditional design discipline, "I was really forced to consider myself as a designer in the broadest sense, I wasn't a textile designer anymore, I was simply a designer" (Design Participant). The realization that design skills moved beyond the particular skillset of a discipline was a recurring theme and raises questions about the way in which designer self-identify and articulate their role. However the learning went beyond design practices. Some participants also referred to the business practice knowledge generated, "…provided new tools and approaches for business that I hadn't heard of before" (Design Participant).

As the collective progressed through the design activities, forming meaningful relationships, the group became a cohesive entity; "We started out as a group of individuals but became a unit" (Business Participant). This was supported by an academic participant who shared that, "It took our team a while to get to a point where we had a shared vision, but our idea was stronger when we got there in the end."

Examples of outflow of learning include the transformation of tacit knowledge to explicit, enabled by design practice. Participants articulated their individual discipline specific skills and knowledge in a way that could be easily understood by all members of the collaboration through engagement in design methods "…I simplified what I do in the beginning, to make it easier to understand but once people started working together, they got it and I could be more complicated in my description" (Design Participant). Furthermore, the adoption of good working practices from each discipline and an openness to future collaboration were also identified as learning points within the chiasma highlighting the potential impact beyond the chiasma context, "I've used some of the techniques since, in my own work" (Business Participant).

Reflection

Reflection was most strongly linked to learning in a balance between inflow and outflow. Participants absorbed the inflow of knowledge during the experience then through synthesis, reflected on that experience and identified their key learning points. These were then applied at a later stage of the chiasma process with impact beyond the event itself; "I took lots in, it was non-stop immersion in a really intense conversation and it wasn't until later, when I'd had a chance to process it that I realized what were important things to remember" (Business Participant). This was most visible as the teams begun to develop their business idea in response to both societal challenges and the experiences of fellow participants, "There was a lot to take in at the start, lots of people sharing their experience and it wasn't until we had really begun to develop our business idea that we could really go back and unpick those experiences" (Academic Participant).

Aside from the acquisition of new knowledge identified in the previous themes, there was a recurring discussion of self-development and personal learning that emerged around the idea of reflection. Participants noted that the direct experience of interacting in a collaborative setting supported the development or enhancement of personal skills, competencies and values. For designers, this was linked to the democratization of design as a practice: "I'm usually quite self-absorbed at work. When I'm designing, I'm the only one who makes decisions so it was challenging to have to share that design responsibility" (Design Participant). For business and academic participants, this was linked to a better understanding of multidisciplinary collaboration; "I'm much more aware of the range of possibilities. My discipline is so rigid; it's difficult to try new ways of working. But I feel inspired to try, to push the boundaries" (Academic Participant).

Discussion

In considering open learning as part of a multidisciplinary collaborative design context highlighted, a number of points were highlighted enabling, informing and supporting the creation of a space for future participatory education practices.

The Ethics of Open

It was clear that creating a shared grounding, or underpinning, for the collaboration in the early stages of the collaboration was essential. This underpinning ensured participants were clear in terms of the aim of the collaboration, the anticipated form and the expected contribution from each participant. This underpinning was developed on a set of core ethical considerations and included the individual elements of mutual respect, a valuing of individual skills and knowledge, a sense of equality and reciprocity. Only once participants felt that had reached a consensus around theses common values could real and balanced contributions be made. Participants noted that learning took place most naturally once this shared understanding had been reached. These ethical interactions reflect the qualities inherent in design practice and can work to support open learning within a participatory context.

There was also a significant role for design in creating an space that was open and equal, enabled through the design tools and activities and through design-based facilitation that reinforced the ethical qualities of design (empathy, creativity, humility, ability to fail) and that then supported the potential ability of participants to learn.

Space for Social Interaction

It was also apparent that the social element of collaboration was critical to the learning process within the chiasma. The social interaction enabled the conditions for relationship building, then contributing to the extent to which participants shared. Once participants had reached a safe space where they could confidently contribute, learning was actively enabled. Social interaction in this context, and in particular the conversations and dialogue that took place around engagement with design tools was fundamental to learning from a socio-material perspective. The connection with design artifacts, the development of a shared understanding, allocation of meaning and translation of multiple perspectives deepened the connection and worked towards enabling a space for learning. This space for social interaction is aligned with similar considerations of the role of conversation in learning and teaching pedagogies (Laurillard, 2007).

The creation of an authentic learning setting also significantly contributed to the level of which participants felt they had a learning experience. The engagement of multiple disciplines ensured that the different perspectives offered were realistic and the experiences shared were relevant to the societal and economic challenges being addressed within the chiasma. Aside from enabling wider learning around multiple perspectives and experiences, participants were able to work in a contextualized and situated way, learning how practices differ across disciplines and considering real world applications of thinking from outside their traditional learning boundaries.

To this end, learning in the chiasma context is a situated and contextual social activity and as such requires a space that enables open social interaction. Reed et al. (2010) state that social learning is the "change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks' and this was true of the chiasma. Further to this, the role of design within the social space enabled facilitated and mediated learning through the use of tools and methods used.

Learning as Added Value

While the chiasma was designed as a knowledge exchange activity, the key focus and anticipated outcome described by participants was the generation of a viable business idea and the subsequent seed funding. Neither individual nor collective learning was considered as an explicit outcome of the chiasma experience. Despite this, all participants reported learning as added value.

The participatory nature of the chiasma required a high level of engagement and this worked to support the participants as active learners. This is a view shared by Mochizuki and Fadeeva (2012) who consider the empowerment of learners through participatory activity. A critical element then is the shift from individual thinking to a shared collective way of engaging and interacting.

Similarly, participants were not always aware that they were learning in situe, with many stating that the full understanding of the learning they experienced was not fully understood until they had the opportunity to reflect post-chiasma. The tangible and immediate outcomes of learning, in this context the knowledge, understanding and skills developed as a collective can be used as examples of effective learning and furthermore they may work to support learning practices and attitudinal change in the longer term.

Conclusion

In considering these findings, the role of design can be seen to enable the conditions for open learning within a participatory experience. By first creating value for individuals before working towards the generation of collective value, the learning that emerges at each stage of the process works to encourage greater connectivity and cohesion and can enable a space for more

effective collaborative activity. This creates interesting opportunities for considering design within pedagogical approaches and the role design might play in facilitating, negotiating and supporting complex contexts.

Beyond this, it is clear that learning in this context can be understood in two ways. The perceived learning, that is the knowledge participants expect to learn within a particular context, and the actual learning, the development of tacit knowledge that isn't often fully realized until beyond the particular event. Whether learning is planned or not, the participatory nature of collaborative design activity encourages it to become an inherent element, enabling opportunities for wider participatory education practices.

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Creativity and ICT to drive new entrepreneurship education

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ABSTRACT

The aim of this paper is to present the conceptual framework that has driven the establishment of the educational model developed under the CREA European Project. CREA Educational Model and Didactic Framework represent a best practice in teaching the first stage of entrepreneurship in intensive Summerschools in 6 cities in Europe, using Creativity and ICT as leverage of innovation.
The methodology adopted to frame the didactic and teaching method has been based on four different strategies:

- Literature review based on framing entrepreneurship education;
- In-depth research with a collection of surveys from a European panel of students;
- A collection and evaluation of 50 best practice cases;
- piloting with a first edition of a European network of summer academies developed under the CREA project.

Starting a company requires considerable entrepreneurial skills. CREA was born to empower these soft skills, driving students to include creativity and ICT in their entrepreneurial educational journey. Along with creativity other drivers have been included in the educational model:

- international exchange of teachers;
- positioning for (very) early stage start-ups;
- physical contact with the students to create a stable community combined with online mentoring;
- design thinking and strategic business design;
- intercultural cooperation, teambuilding and networking as pillars of the two training weeks (first week focus on idea generation, the second on business modeling).

In 2015 a first pilot edition of the 6 CREA Summer Academies has been realized in 6 European cities. CREA aims to build a bridge among idea generation and business modeling in order to support students in the first stage of the travel in the world of start-up.

Keywords

design thinking, business modeling, didactic innovation

Methodology

In 2014 European Commission started a new line of funding programs focused on supporting new ways to teach entrepreneurship to new generations of high school and university students. A network of universities, incubators and local agencies answered to this request with a two years program aiming to combine research and training in a unique path of knowledge growth focusing on three main pillars: creativity, ICT and Entrepreneurship.



Figure 1. CREA Summer Academy pillars

The project strengthens the European Entrepreneurial base by setting up a network of summer academies focusing on these three pillars thus establishing new best-practices in teaching entrepreneurship. The cross-fertilization between ICT and creative sectors is particularly important since they are two important drivers that new entrepreneurs can use to generate disruptive innovation with start up ideas in different fields.

The methodology adopted to frame the didactic and teaching method was based on four strategies:

- Literature review framing generic business start-up activities and entrepreneurship education activities and the general contribution of creativity and ICT in the start-up framework;
- In-depth research collecting surveys from a European panel of students adopting a user centered design approach in the educational model;
- A collection and evaluation of best practice cases with a consequent positioning of an innovative educational model (the CREA Educational Model and Didactic Framework);
- Piloting a first edition of a European network of summer academies developed under the CREA project.

Starting from the knowledge and experiences the Consortium has built with past research, CREA has adopted a recursive method:

- the Consortium started with experiences and models of research and teaching used in past activities in order to develop a first model of action;
- the first model of research and training has been simultaneously compared with best practice cases and tested in practice with a 1st edition of 6 summer academies;
- the monitoring and assessment activities allowed the Consortium to redefine the model for the 2nd test;
- at the end of the second edition the Consortium will develop the best model for Summer Academy to share with a large panel of Universities all over Europe.[ii]

The CREA methodology is depicted in figure 2:

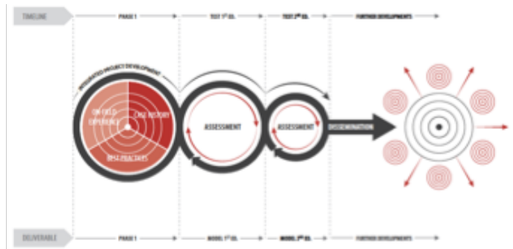


Figure 2. CREA methodology

Culture and Creativity as New Drivers for Entrepreneurship

Culture and creativity are increasingly important not only for their social rule, but because they are the levers for the creation of new companies, jobs and to generate growth and drive traditional economies towards new areas of innovation. Within the CREA project, culture and creativity are recognized to be important to entrepreneurship and entrepreneurship education on different levels. First of all, creativity plays a crucial role in the development of new businesses in the innovative domains as a driver for invention, creative new business ideas and innovation. Secondly, a cultural and creative environment is very important to foster the development of entrepreneurship and innovation. Thirdly, creativity and creative methods such as design thinking are more and more recognized as being important factors in the strategic design of new businesses as they contribute to user-centric thinking, market adaptation, communication skills and other entrepreneurial skills. Therefore, design thinking and the creative approach to entrepreneurship are important elements of the CREA entrepreneurship education.

Invention, Innovation and the Cultural and Creative Environment

In the "Theory of Economic Development", Schumpeter already proposes that entrepreneurs starting new businesses provide the engine for economic growth (Schumpeter, 1942). In recent years, entrepreneurship has indeed come to be perceived as the engine of economic and social development throughout the world. Moreover, innovation and the use of creativity and ICT have become very important drivers for entrepreneurial success. ICT and creativity (design, communication, culture, arts, creative technologies, etc.) help start-ups not only to update their skills and their communication strategies according to the market requests of today, but also play a vital role in innovation and the development of creative new products and services for mobile, web, etc. For this, the environment is playing an important role, as physical locations are a huge factor in fostering the development of entrepreneurial and therefore innovative and creative environments. In the definition of Scott (2006) the creative field has three main peculiarities:

- There is a network of firms and workers, creating an interactive agglomeration;
- "It is constituted by infrastructural facilities and social overhead capital, as schools, universities, research establishments, design centers, and so on" (Scott, 2006: 8);
- It expresses the "cultures, conventions, and institutions" (Scott, 2006: 8), being characteristic of the agglomerated system of production and work.

The creation of an innovative entrepreneurial environment has been discussed by Manimala (2009). He distinguished between task environment and general environment. The task environment is defined as composed by "factors which have specific impact on business activities" (122) such as customers, suppliers, labor markets, financial institutions, competitors etc. The general environment is defined as the collection of economic, socio-cultural, legal-political and educational systems of a society.

The new-schumpeterian approach perceives the technological, social and cultural environment as the essential factor for developing entrepreneurship through creativity. Creativity has collective and widespread characteristics because the most brilliant people think new ideas and then other people (entrepreneurs) make their development possible (West, 1997). According to Fagerberg (2003), the first phase corresponds to invention, while the second phase constitutes innovation. Innovation puts the invention into practice; therefore it is in this phase that creativity and entrepreneurship come together in strategic business design.

All these environmental and business design issues are at the basis of the development of the CREA model, favoring the development of entrepreneurial capabilities, at an international level, starting from creative ideas and with the support of ICT.

Creativity in Business Design and Entrepreneurship Education

Recent studies suggest a significant positive relationship of intellectual capital with business performance. Intangible assets are important in management processes since they are considered to be a critical source of sustainable competitive advantage. Business start-up success can be partially explained by human, organizational and relational capital elements. Each of these factors deals with intangible elements such as entrepreneurial skills, strategic decision-making, market adaptation, communication strategy, networking ability and so on. Creativity and design thinking highly contribute to these elements in innovative ways. Within the CREA project, these assets are used as part of the business design process, as business design is a creative problem-solving methodology applying the designer's way of thinking to create (business) value. Design thinking is a critical part of the CREA entrepreneurship education, as the principles of design thinking teach the students and young entrepreneurs to base and evolve their ideas, products and services in a user-centric way. Taking the user and customer as the most important starting point for their business design and product development, start-ups highly increase their chances of success as they learn to adapt to real customer needs and market developments. In section 4.0, we will elaborate on the design thinking methodology as part of the CREA education.

Entrepreneurship Education

Entrepreneurship education covers a wide variety of audiences, objectives, educational material and methods. According to Fayole and Gailly (2008) entrepreneurship education aims at defining educational activities based on answering the following problem-framing questions: Why (objectives, goals)? For whom (targets, audiences)? What (contents, theories)? How (methods, pedagogies)? For which results (evaluations, assessments)?

The 'Why' dimension. One of the primary objectives of entrepreneurship education is to provide some kind of educational (or training) process aiming at influencing individuals' attitudes, behavior, values or intentions towards entrepreneurship. An equally important objective relates to the acquisition of personal skills in entrepreneurial activity, whereas new business formation, opportunity recognition and managing of existing small firms have been recognized as less important objectives.

The 'For whom' dimension. Participants in entrepreneurship education programs may have various socio-demographic characteristics and various levels of aspirations. Therefore, the design of educational activities and programs on entrepreneurship have to take into account the diversity of audiences, their social, demographic and psychological characteristics, as well as the academic background of participants (Bechard and Gregoire, 2005).

The 'What' dimension. Both the course focus and content normally vary according to the specific requirements and needs of participants. Fayolle and Gailly (2008) distinguish three main axes for structuring entrepreneurship education: the professional axis, the spiritual axis, and the theoretical axis. Of particular importance to the work of CREA is the professional axis of entrepreneurship education relating to three kinds of knowledge:

Know-what: what one should do to act in a given situation, e.g. to take advantage of an opportunity, to validate an opportunity, to conduct market research, to establish a technology company, etc.

Know-how: how one can deal with a given situation. For example, how to identify risks and face them accordingly, how to combine work and personal life balance, etc.

Know-who: who are the "right" people and the "right" networks that will be useful in providing resources and guidance to the new entrepreneur. These may include specific contributing actors, such as developers, engineers, marketing experts, as well relevant organizations such as incubators, venture capital companies, business angels, etc.

In addition, the spiritual axis is important in CREA as well, as team building and team spirit as well as developing the entrepreneurial spirit of individual students plays an important role in the CREA entrepreneurial education.

The 'How' dimension. There is a wide range of pedagogical methods and approaches being tested and used for teaching entrepreneurship, including case studies and role-playing. Overall, entrepreneurship education researchers categorize teaching methods into two groups: the "traditional methods" (mostly lecture-based) and the "innovative methods" (action-based), also known as "passive methods" and "active methods", respectively. The latter require the instructor to facilitate learning and apply methods that enable students' self-discovery. Other methods used, but not as common as the previous group, include: a) business/computer or game simulations b) video and filming and c) role models or guest speakers. CREA specifically focuses on innovative action-based methods, building on the student's ability to use the creative approach to their entrepreneurship and business idea, as is also discussed in the following section.

The 'For which results' dimension. The issues and challenges regarding the assessment of entrepreneurship education programs relates on one hand to the selection of evaluation criteria and on the other hand to their effective measurement. The selection of evaluation criteria is linked to the diversity of objectives of entrepreneurship teaching programs (Gartner and Vesper, 1994). Such criteria can be related to specific knowledge, specific skills and tools, level of interest, degree of participation in the classroom, etc., based on what the programs' organizers want and are able to measure.

Based on the above framework for entrepreneurship education developed by Fayolle and Gailly (2008), and as a first step towards addressing the CREA challenges, we developed the CREA Educational Model (CEM) and Didactic Framework, which is presented in more detail in later sections.

Practice-based Approach: Design Thinking and Business Modeling

Creative approaches to entrepreneurship are based on a number of nearly opposite assumptions from the predictive approach. First, in a creative approach, entrepreneurs start with who they are and what they know - personal achievements and passion, experience, education (Fiet & Patel, 2006). Second, it is assumed

that the entrepreneurs initiate actions from a position of inclusion in a wider social framework (Granovetter, 1985, 1992). Observing and reflecting on her situation, an aspiring entrepreneur may ask, what can I do with my own resources? Who do I know that can lead me to other, much-needed resources? Third, entrepreneurs create the venture's culture and overall operating environment through social relations (Alvarez & Barney, 2007), thus intrinsically taking into consideration the wider network of entities that they need to link with. Particularly, they bring along new people who reshape perceptions of the environment and modify beliefs about what is desirable, feasible, and viable. Venture stakeholders are not necessarily assembled based on some measurable fit with the objective target opportunity, but rather based on who demonstrates passion to act with the available means (Dew et al., 2009).

As can be learned from this paper, it is these factors that the practice-based approach of the CREA entrepreneurial education is stimulating through learning by doing, learning by designing, learning by networking and learning by reflection (reflective practitioner). Design thinking and business modeling, combined with team building and action learning, are the methods in which CREA is achieving those goals.

Design Thinking: from Theory to Practice

Design is becoming a pervasive aspect in different fields and additionally increasing its importance in the set of disciplines in training programs addressed to entrepreneurship. A huge range of subfields, such as industrial design, product service system design, communication and interaction design, service design, and strategic design are becoming crucial for several new areas of business for future start-ups. ICT are driving the creation of a large panel of new companies opening a need of knowledge in designing the service, the whole experience of use and interaction, and the communication channels for new entrepreneurs. Design should support the process of creation of a new company because it is close to the company strategy: strategic design is a mindset that drives to face challenges and problems in the entrepreneurial journey. Future-oriented entrepreneurs need to measure their success in terms of relevance of designed products, services and conceptual solutions for people's everyday lives. Entrepreneurs like designers need to go out and observe people's experiences in the real world rather than rely on extensive quantitative data to develop their insights (Brown, 2011).

They have to begin with immersion in real-life situations to gain insight into experiences and meanings forming the basis for reflection, imagination, and design (Nelson and Stolterman, 2012). The process of business idea generation should then start from ill-defined problems (Buchanan 1992; Gaver 2012), integrating processes of observation and reflection that generate a purpose for design thinking activities aimed to create products, processes, and services that transform reality.

CREA started with a purpose to create a training program able to improve such skills and creating a bridge between design thinking and business modeling theories and practices. The learning theory at the base of the CREA educational model is the Design Experiential learning (Dewey, 1938) with a holistic model of the experiential learning process (Kolb, 1984). According to the six propositions of the theory (Kolb, 2005) we identified the specific focus of the CREA learning purpose in the entrepreneurship education.

Learning is best conceived as a process, not in terms of outcomes: in CREA students pass through a process combining theory and practice in a two weeks training program. In CREA students start with an idea and vision, and go out with an entrepreneurial attitude together with a first start-up experience. All learning is relearning: in CREA students are driven to a continuous cycle of examination, testing, integration and redefinition of ideas. Learning requires the resolution of conflicts: an important part of the CREA process is the team-forming and the teambuilding. At the beginning of each summer academy, interdisciplinary and intercultural teams are built. In these teams, different fields of expertise, different disciplines and different cultural and educational backgrounds come together. In the CREA learning environment, students learn to use these differences within their team as vehicles for creativity, cooperation and professional development, supported by their coaches and specific didactic tools. Empowerment and resolution of conflicts in the team working are the leverage of the work on their business idea. Furthermore, students also learn from the resolution of the conflicts they encounter between their own ideas and (business) designs and the feedback and needs they get from real-life users and customers. Students are specifically urged to gather input from users and customers to improve their business idea and market potential, and the according adaptation of their own ideas is a very important learning experience. Learning is a holistic process of adaptation to the world: in CREA personal motivations of students are at the base of the learning process. A continue process of reflection combining personal thinking and behaving with relevant needs and problems recognized in the global society is the core of design thinking and business modeling practice. Learning results from synergetic transactions between the person and the environment: in CREA students spend two full time weeks sharing time of study, practice activities, leisure, game, field visit including local communities and different stakeholders in the learning process. Learning is the process of creating knowledge: including dedicated sessions for the knowledge sharing between students and teachers and adopting specific tools to collect feedback during and after the learning process, CREA represents a platform for the continuous creation of knowledge around creativity, ICT and entrepreneurship. The learning experience of CREA in each summer academy could be different and balanced on the four learning styles (Kolb, 2005): abstract conceptualization, active experimentation, concrete experience and reflective observation. The different mix of learning methods (Fig. 3) is generating different learning experiences for the summer academies.



Figure 3. Learning methods in the 4 clusters of learning styles adopted in CREA framework.

Business Start-up Process

New ventures must tackle a number of diverse problems, pitfalls, and obstacles. In an effort to systematize the steps towards new venture creation and to offer guidance and advice to aspiring entrepreneurs against unpredictable problems, many scholars proposed a more systematic, process view of entrepreneurship whereby tested steps are taken to identify and evaluate a business opportunity, formulate a business model, quantify the resources needed, create a plan, and implement it. According to this view, an entrepreneur ''works backwards'': from fixed assumptions about the demands of exploiting an entrepreneurial opportunity to specifying, executing, and monitoring the plan (Chandler, DeTienne, McKelvie, & Mumford, 2011). Along this line of thinking, Applegate (2014) has identified two stages in the entrepreneurial journey: The first is the Pursue Opportunities stage, in which aspiring entrepreneurs first recognize potential opportunities and make the decision to become entrepreneurs and then adapt and shape the opportunity as they clarify assumptions and reduce uncertainty as the new venture is launched. The second stage is the Pivot to Growth stage, where entrepreneurs start to engage with the ecosystem and make the transition from a startup to a sustainable business by exploiting growth options, scaling up the business and harvesting value. Other scholars have worked further along these lines and have refined this approach. Reynolds (2000), for example, has come up with a business start-up process that is considered to have four stages, with three transitions. The first transition occurs when an individual decides to pursue a venture creation – the gestation stage. The second transition occurs when the gestation stage is complete, firm birth has occurred, and an infancy-stage firm is in place as a running business. Unfortunately, for many entrepreneurs, the next stage is to abandon the effort. For the successful ones, though, the third transition is a passage into the adolescence stage. In a subsequent work, Grilo and Thurik (2005) refined these stages into seven engagement levels, which are comprised of:

two nascent stages ("thinking about it" and "taking steps for starting up"), two business stages ("having a young business" and "having an older business"), two exit stages ("give up" and "no longer being an entrepreneur"), and an outsider stage ("never thought about it").

Later on, Van der Zwan, Thurik, and Grilo (2010) and Van der Zwan, Verheul, Thurik and Grilo (2013) further adjusted the aforementioned levels proposing a 5-step entrepreneurial ladder, where each step comes as an answer to the following question 'Have you ever started a business or are you taking steps to start one?: No, it never came to my mind ('never considered'), No, but I am thinking about it ('thinking'), Yes, I am currently taking steps to start a new business ('taking steps'), Yes, I have started or taken over a business in the last three years and it is still active ('young business'), Yes, I started or took over a business more than three years ago and it is still active ('mature business').

Three side answer categories were also defined:

(2a) No, I thought of it or had already taken steps to start a business but gave up ('gave up').

(5a) Yes, I once started a business, but currently am no longer an entrepreneur since the business has failed ('failure').

(5b) Yes, I once started a business, but currently I am no longer an entrepreneur since the business was sold, transferred or closed ('sell-off').

In this model, firm birth takes place between the third ('taking steps') and the fourth ('young business') stages. Understanding the influence of a number of variables in entrepreneurial ladder transitions has been an important area of research in the field of entrepreneurship. Their appreciation and understanding also plays a key role in developing the right educational activities that can help an individual move from one step of the ladder to the next. Such variables include, for example, the role of gender, the presence of role models - and in particular self-employed family members which appear important for predicting involvement in entrepreneurial activity - and the individual risk tolerance, which has been found to have an impact on overall advancement in the entrepreneurial process, although to some extent it holds back individual's intentions to start up a business. Of particular interest is the role of educational activities in entrepreneurial activity. Although there is significant empirical evidence that there is an overall positive effect of the education level on entrepreneurial progress, the impact of education level is significantly more important at the first steps of the "entrepreneurial ladder" - i.e. in becoming aware of entrepreneurship as a possible career option and in forming early entrepreneurial intentions - but appears detrimental when advancing to later stages, where relevant experience and skills may become more important (Van der Zwan, Verheul, Thurik and Grilo, 2013). Therefore, looking at the business startup process a need emerged for a specific training program addressed mainly to the nascent stages of the entrepreneurial journey, when the idea generation is expected to unravel to a business model.

CREA Case Study: Bridging Idea Generation and Business Modeling

Thus, the nascent stages of entrepreneurship have proven to the partners to be the best framework to establish an innovative training program focusing on creativity and ICT because in this stage cross fertilization between design thinking, teambuilding and ICT opens new paths of entrepreneurial journeys. CREA has been the incubator of research and a piloting at European level of this new model of training. Besides cross-fertilization between creativity, entrepreneurship and ICT, internationalization and networking were two other very important objectives of CREA. It functioned as a laboratory to test the possibility of enlarging the network of institutions participating in the Summer Academies in order to increase the involved competences.

Best Practice Case Research

To establish a unique educational model customized on the three pillars of CREA (creativity, ICT and entrepreneurship), the Consortium performed a best practice case research. We identified over 50 programmes in Europe and US relevant for Entrepreneurship; 15 best practices were analysed and compared with the CREA Educational Model in order to develop a unique and innovative Didactic Framework able to distinguish CREA with a real value proposition for high school and university students.

The questions that we focus on in the analysis of best practices

were: How to stimulate entrepreneurship in an early stage of 'becoming an entrepreneur'? Where to put the emphasis and through which tools and methods? In which way is CREA an addition to the existing field of entrepreneurship education?

In line with these questions, the pillars of CREA Educational Model were narrowed down to make the collection of data feasible. Hence, the comparative framework has been formed taking into account the first three pillars of CREA Educational Model, and the selection criteria that led to the list of 15 good examples.

The key findings allowed identifying 5 drivers of innovation:

1. Individual vs Team + Local vs International. CREA Summer Academies present a good balance among local impact and international points of view. This strength allows to push local values and expertise but connected with several international opportunities and elements: experts exchange, multicultural approach to participants, international events etc.

2- The three pillars (ICT, Creativity and Entrepreneurship). Our best practices research highlights there are many courses and programs focused on the combination of two of these three pillars: ICT and Entrepreneurship, Creativity and ICT, Creativity and Entrepreneurship.

CREA is the first program that combines all three pillars generating new points of view in the European training panorama.

3- Knowledge vs skills + learn vs practice. CREA chooses to stress the practice-based approach while keeping a good balance among knowledge transfer (lectures, best practice cases, keynotes etc.) and skill building.

4- Idea development vs modelling + design vs management. CREA wants to balance a design approach to the business idea development and management of the business model. Consequently, CREA Summer Academies have a strategic position on the early stage of business development (the nascent stage).

5- Duration and costs. The average cost for similar training program is between 1000 to 3000 Euros. This information is at the basis of the Business Model of the CREA Summer Academies after the expiry of the EU funding.

CREA Educational Model

According to the position of CREA in the panorama of training programs and events for start-ups the Educational Model has been set up based on 4 pillars:

1- Objectives. The goals of the summer academies have been summarized in 4 main values: increase the entrepreneurial attitudes/culture of participants, instill/enhance entrepreneurial competences and skills, actively pursue new business formation and/or development, raise awareness about and/or enhance societal aspects of entrepreneurship

2- Learning Outcomes for the CREA summer schools have been defined as “statements of what a learner knows, understands and is able to do upon completion of a learning process”. These statements have been defined in terms of knowledge, skills and competences. Each summer academy has identified specific learning outcomes according to the general framework shared among the consortium but identifying specific focus according to their particular expertise, program, schedule of contents and topics.

3- Structure, Contents and Teaching Method. Contents have been selected close to thematic priority areas of a CREA: creativity, ICT and entrepreneurship. Creativity: creativity and idea formation, design thinking, pitching and communication. Entrepreneurship: lean startup, business models, business planning, business model canvas. ICT: ICT trends, big data, web development and mobile application, user experience and interaction.

4- Evaluation. A set of tools has been developed according to the need to evaluate the whole experience of students and teachers at CREA summer academies. The main drivers of the assessment have been: relevance, effectiveness, impact and sustainability.

CREA Didactic Framework

Following the principles of the CREA Educational Model, the shared approach between the CREA partners was made more concrete in the General Didactic Framework, describing ways of teaching, coaching, team building et cetera. It was turned into a concrete handbook to help all CREA partners, including future organizers of CREA Summer Academies, to better understand and act on the practice based approach to entrepreneurship education.

Implementation of Summer Academies

In 2015 a first edition of Summer Academies has been realized from June to September in 6 European cities. Each summer academy hosted experts and professors covering the three main areas of CREA: creativity, ICT and Entrepreneurship. People from SMEs and successful young entrepreneurs have been invited as keynote speakers and mentors for the Summer Academies. Particular attention has been paid to the staff exchange and European mobility of professors and experts from the universities and incubators involved in the CREA project. Also, professional development of teachers and professors was enlarged through learning from each other during international meetings and additional webinars about the CREA Didactic Framework. This way, all partners benefitted from each other’s expertise in course content as well as teaching methods.

Training

Students in the first edition of CREA summer academies passed through three main steps: from summer academy (among a call for application and a first phase of selection) to the mentoring and prototyping phase (after the two weeks of training) and finally the ICT Business Idea Contest where the two best teams of every Summer Academy (selected by a local jury) have had the chance to present their ideas in a pitching session in front of investors and incubators. Each summer academy addressed in its course the principles of entrepreneurship and creativity, as well as the use of ICT and technologies in a practice-based manner. The first edition of CREA Summer Academies involved 134 students from universities of 23 countries: Newcastle Summer Academy (14 participants, from 8 countries), Ljubljana Summer Academy (23 participants, from 4 countries), Utrecht Summer Academy (21 participants, from 12 countries), Tallinn Summer Academy (20 participants, from 4 countries), Lake Constance Summer Academy (28 participants, from 4 countries), Lake Como Summer Academy (28 participants, from 9 countries).

Practice Based Learning In Teams

With the students’ ambitions and learning questions as a starting point, the Summer Academies are characterized by a practice based approach evolving around student teams working on their own business idea, thus having a real start-up experience. Practice and theory are integrated, and theory is used to support the formation and development of the business idea. The students, bringing in different fields of expertise and different cultural and educational approaches, learn from each other. In the process of creating and solving complex problems together, they learn how to communicate and work together in a pressure cooker situation. Professors, entrepreneurs and experts offer their knowledge and support in the role of teachers or coaches in a wide range of didactic forms, varying from seminars, workshops, field visits, presentations, peer learning and consultancies.

Tools

A set of tools has been adopted from all the summer academies: Business model generation (and business model canvas), Value proposition canvas and User journey canvas. Additionally, a set of innovative tools has been developed during the CREA project and tested in the first edition of Summer Academies.

1- Me and my start-up team. Tool for team building (adapted from the Ofman model) tested in 3 Summer Academies: Utrecht, Lake Constance, Lake Como

2- Unpack Creativity Canvas. Innovative Tool developed in order to cover the gap between idea generation and the business model canvas. It has been tested in 2 summer academies: Utrecht and Lake Como

3- Pitch cooking tool. Innovative Tool developed to support the pitching preparation. It is a set of pitch guidelines followed by all the teams involved in the CREA ICT Business Idea Contest.

Mentoring Activity

Mentoring and coaching were offered during the two weeks of training to all teams to support them in the development of their ideas. The coaching sessions took place in the afternoon in order to have an application of tools and method learned in the morning lectures. Each summer academy has managed the coaching and mentoring activity choosing between or combining the following modalities: 1) One coach has been chosen for each team in order to have a continuous collaboration on the development of the business idea; 2) Each team had the chance to talk to several coaches with expertise in different fields (e.g. business model, marketing, design, ICT etc.), so to receive different feedback and view on their ideas.

After the two weeks of training the teams from all over the Summer Academies have joined the online platform developed by Politecnico di Milano to manage on-distance mentoring throughout the prototyping phase until the Business Contest. Since one of the main goals of CREA is to support students in the first stage of the travel in the world of start-up the panel of experts and mentors involved in the mentoring activities has been selected with previous experience in similar activities (business advisor, collaboration with incubators, experiences with start-ups etc.). The mentoring proposed in the CREA process supports the teams in setting up their business model and prepare the pitch presentation at the CREA ICT Business Idea Context. To ensure the mentoring approach will be sustainable even after the CREA Contest (in particular for the winning teams) the consortium has adopted two strategies:

at local level each partner has set up a collaboration with local incubators or similar organizations able to follow the teams after the summer academies and the contest (in case of good team with innovative ideas);

at European level partners have been established collaboration with incubation programs and a network of incubators in order to create a connection between CREA and the existing incubation services offered in Europe.

Conclusion

The results achieved for the first year of Summer Academies can been summarized as follows: 318 students applied to the CREA call for applications, 43 nationalities of students involved, studying in 23 countries where they are enrolled in 68 universities, 134 participants; 33 teams formed during the summer academies with business ideas in the early stage, 70 teachers and experts involved, 5 Incubators directly involved, 65.1% of students with a highly positive overall satisfaction.

After the first edition, overall strengths have been identified:

- Main pillars: focusing on educating students in the crossroad of entrepreneurship, creativity and ICT position CREA as a first program combining all these pillars which is innovative in the European training panorama;
- International network of partners: in CREA, academic and business perspectives come together through a European partnership among universities, incubators, regional development agencies and business support initiatives;
- Intercultural teambuilding: applications to the summer academies are accepted both from individual participants and team, coming from all over the world. Thus, intercultural cooperation & teambuilding are key elements of the training program;
- Research + Training + Event: CREA combines in a unique program both research on creative start-ups, a entrepreneurial training program and an international contest;
- Bridging idea generation and incubation programs: winning participants have the chance to be introduced to incubators all over Europe;



- Practice based approach: CREA chooses to stress practice approach while keeping a good balance among knowledge transfer and skill building;

- Co-creation of knowledge: students participate actively in co-creating the high quality of the CREA Summer Academies (educational “active method”);

- Teachers/mentors/participants: co-construction of knowledge [“to facilitate learning and apply methods that enable students’ self-discovery.” (Masaliba, 2010)];

- International and interdisciplinary faculty: teachers’ exchange allows for covering all areas of interest, skills, knowledge and expertise;

- Local impact with international point of view: CREA summer academies present a good balance among local impact and international networks. This strength allows to push local values and expertise while being connected with international opportunities and knowledge;

- Tools: me-and-my-startup-team, unpack creativity canvas, pitch cooking tool are designed to empower start-up development stages between idea generation and business modeling;

- Online mentoring: with the online tool, CREA uses an open platform for sharing, discussing, evaluating and managing coaching and mentoring activities online;

- A nascent stage program. CREA has a unique positioning in the market for (very) early stage start-ups learning ‘how to become a start-up’ (the nascent stage, Grilo and Thurik, 2005) targeting teams who want to learn and grow & individuals who want to join a team.

This first edition of CREA Summer Academies demonstrates the educational model and the didactic framework have been very effective in terms of skill building, knowledge transfer and learning practice. We improved the second edition of summer academies starting from the results of the best practice research, results of the first edition of CREA and according to the value proposition fixed for the CREA research and training program:

- domain: Creativity + ICT + entrepreneurship are the main pillars that drive research and innovation in the CREA education;

- nascent stage: CREA is a set of research, training and events addressed to start-ups focused on Creativity and ICT in the nascent stage of business process;

- design thinking + business modeling: CREA is bridging idea generation and business modeling.

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Design fiction in design education: urbanism, para-pedagogy and futures literacies

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ABSTRACT

This paper extends the tradition of speculative design linked to products and gallery settings to an exploratory narrative design fiction within the domains of landscape and urbanism to address matters of future literacies, context and climate change. Theoretically based in narrative, communication design and sociocultural learning, the paper presents a design education experiment in two master’s level studio courses in urbanism and landscape from autumn 2015 on the arctic territory of Svalbard. Moving away from depleting practices and policies of mineral, oil and fishing extraction, these courses investigated alternate ways in which urban, physical and cultural landscapes might be investigated - creatively, civically, critically - for more open, productive ‘design futures’ within the community of the archipelago. The paper embodies and discusses students’ productive, putative and projective design fictions as a mode of speculative learning and futures studies. It unpacks its articulation in emergent and informal work over a semester with 12 student contributors and a designer-researcher and design educator-researchers. Analytically, the paper develops a para-pedagogy of design fictioning within the notion of expanded and multiply voiced learning spaces: design fiction may be understood as participative and anticipatory yet situated and realised within a wider pedagogy of speculative design literacies. Methodologically, and via the format of a multimodal essay, the paper reflects on how such a process may be enacted within an overall anticipatory and collaborative pedagogy of critical design and futures literacies. The paper works between multimodal design fiction work itself and analysis and reflection on production based inquiry and problem-finding as research strategies in shaping learning in the future.

Keywords

design fiction, para-pedagogy, futures literacies

INTRODUCTION



Figure 1: Longyearbyen 2050, projected future, digital rendering of high rise buildings, lighting and transportation infrastructures, on contemporary photograph. (Benjamin Astrup Velure).

Thematics

In the image above, taken from the experimental design fiction work and pedagogy called Longyearbyen 2050 (LYB 2050), digitally rendered line drawings of buildings and transport and communication infrastructures are overlaid on a realist photograph of the main city of the arctic archipelago Svalbard. This experiment was connected to two master’s level studio courses in urbanism and landscape run in autumn 2015 on site in the arctic. Moving away from current depleting physical practices and policies of mineral, oil and fishing extraction, these courses investigated alternate ways in which urban, physical and cultural landscapes might be investigated creatively and critically to build more open and productive design futures (e.g. Yelavich & Adams, 2014). This image encompasses the two main themes – one pedagogical and analytical, and one methodological and rhetorical - this paper addresses: 1) design fiction as a depositiv, apparatus or device to communicate about the challenges and dynamics of climate change, and 2) design fictive authoring and processes of engagement by students and teacher-researchers in developing a related para-pedagogy of futures literacies for anticipating urbanism and change in arctic cities. The design fiction we developed was part of a ecological and mediational view to shaping a wider online future work beyond the confines of the course related to a large research project called Future North. Speculative inquiry forms part of that project’s mode of inquiry (Parisi 2012), as does fiction as a device to develop shared pedagogies of reimagining urbanism (Amin & Thrift, 2002), learning the city (McFarlane, 2011) and the landscape and reaching local and wider communities.

The paper develops a para-pedagogy that frames design fictioning as part of expanded and multiply voiced learning articulations: design fiction may be understood as participative and anticipatory yet situated and realised within emergent speculative design literacies. The para-pedagogy of futures literacies is appointed to anticipate the needs and problematics facing urbanism and change in

arctic cities. Researching design pedagogy is conducted through design fictioning and through an open process-oriented multi-modal narrative. The paper reflects on how such a process may/not be enacted within a pedagogy of critical design literacies for fast-changing futures (Mainsah, 2014). This includes joint reflection on contributions from students and the role of a motivating educator in connecting problem-finding as a research strategy (Gale, 2015) in shaping learning as 'futures literacies' (Miller, 2007). These need to be understood as participative, anticipatory and situated (Stuedahl, 2015) and realised within a wider pedagogy of design literacies (Sheridan & Rowsell 2010).

Methodologies

Methodologically, the paper concerns the interrelationships between the design fictional work and the account and analysis of its shaping and its role at the level of collaborative, imaginative and speculative design (not yet participative public use). The paper adopts a multimodal mode of bricolage to convey the links, juxtapositions, fractures and fissures in using shifts in time and space, expectation and anticipation embedded in the fictive work. It splices these rhetorically into the essay as a constituent of a reflexive humanistic design research text that is ethnographic in its methods of understanding developmental, co-creational design activities (Crabtree et al., 2012). The paper shifts from 'an ethnography of the possible' (Hasle, 2013) to one of anticipation in which design fiction and urban futures pedagogy open out 'the possibility of creating a discursive space; a space that is fictionally shaped; a way of projecting ourselves into possible futures' (Celi & Formia, 2015:12). The research account blends design fiction work, story making aesthetics (Edinow & Ramirez, 2016) and ethnographic discourse, with images and different modes of writing. The essay is built around key thematics that incorporate elements of the bricolage; it seeks to synthesise related research literatures from a variety of fields. One tactic deployed is that of the dispersal across the text of four main stages in the development of LYB 2050. There follows the first one.

PREVIEW & PREPARATION. It's a late afternoon on our first full day in Longyearbyen. We are packed into the largest room in one of the converted miner's residency blocks up the valley above the town. The course tutors present their outlines, schemes of work and meetings. It's a dialogically lively space and the students seem genuine motivated. The teachers have given me a space to make a pitch for LYB 2050. I decided on the plane from Tromsø that we need a title to anchor us in the future! I mention my earlier design fiction experiments and explain I am part of the Future North research project. I invite students to see me afterwards, out in the city, in cafes and in the restaurant/bar, and later Oslo. I signal that this is a tangential experiment open to any and all modes of representation suited to narrative intent. It's generated rhizomatically around issues and scenarios not linear plot. Later in Oslo, Wai Fung Chu hands me an elaborate hand drawn and water colour sketch of the town as if we lived underground or underwater (Figure 2). Her illustration contains a series of questions and statements, asking us to think through her sectional drawing across the width of the town from the ocean, looking up the valley back to the miners' cottages where we began, and into the future.

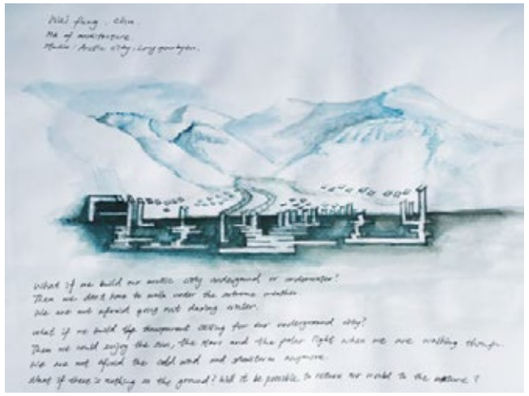


Figure 2: Longyearbyen 2050, an underground/underwater city, with transparent ceilings and a return to nature, hand drawn watercolour sketch and text. (Wai Fung Chu).

FORWARD HEAVE!

Design futures

Design is principally concerned with reaching beyond immediate contexts to shape artifacts and processes for ideally better futures. 'Design futures' (e.g. Yelavich & Adams, 2014) is used to refer to how design is a mode of making and reflection that moves beyond an every day empiricism. In recent years, the imaginative and speculative have received attention due to their value and potential in helping construct design that is less functionalist, more putative and problematising (Dindler, 2010), shifting its ontological claims from truth based to explanatory and exploratory ones (e.g. Bergman, et al., 2010). Interest has grown about the fictive, contingent and speculative in design; the role of fiction has been considered in experiments in design research more broadly (e.g. Knutz, et al., 2013). It may be seen in terms of current, situated cognition (Lave & Wenger, 2001) that is located in the future.

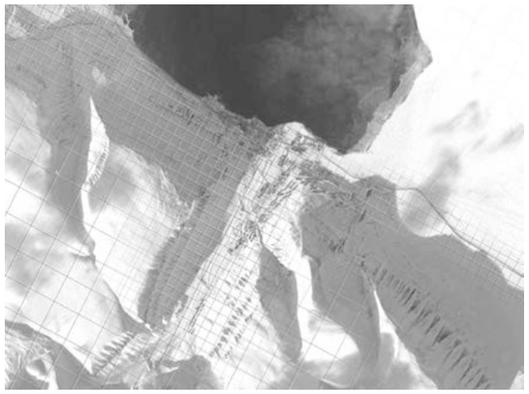


Figure 3: Longyearbyen 2050, topographic, topological, digital grid showiy surfaces simultaneously. (Audrey Touchette)

Longyearbyen GRID NETWORK

Nothing is static, the territory is on the move, so is the industry of politics qualifying Longyearbyen.The mining claims grid has changed overtime, reconfiguring constantly its boundaries in order to foster Norway's presence on the island. Acknowledging the grid main operative value is control, would there be some parallels between the mining properties grid and the very first colonization maps? And what about the experimental or testing ground direction that has undertaken the city in the recent decades with the increase of research and tourism in polar region?

Looking at the different scientists approaches to understand and control the arctic environment around Longyearbyen should we expect a switch in the former staking claim expression used by mining companies? Is research the new strategy for the conquest of the North? An example of infrastructural second use would be the abandoned gallery of Mine 3 which had been chosen as an international seeds bank storage for the Seed Vaults research project.

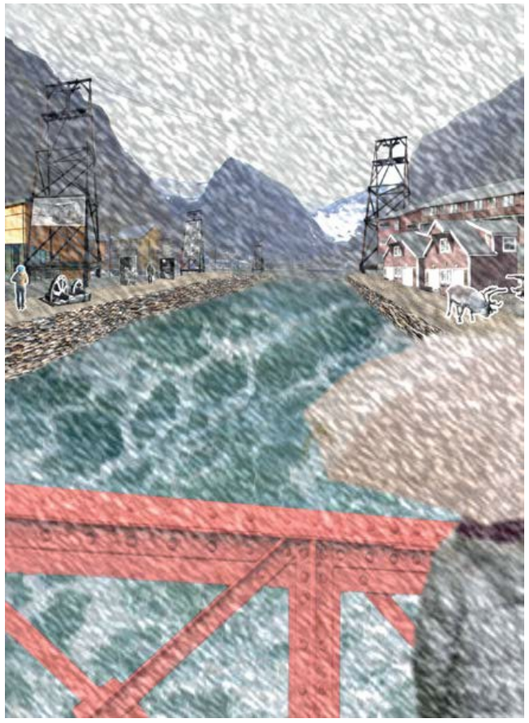


Figure 4: Vision of Svalbard as a city with redesigned river and activities, pointillist style pitting realism. (Robert Blödorn).

SVALBARD_VISION_ARCTIC CITY

One core is the reactivation of the network of mining items for tourism and entertainment. Longyearbyen should not become a dead city, waiting for the breakup of the heritages. It shall grow as a sustainable, renewed, modern, livable city. The energy will be produced by solarpanels on the rooftops of every building.

The big fortune of Longyearbyen is its bad luck the same time: The River Longyearelva. Today the river is a stream flooding a channel, renewed every year by human intervention, but unfortunately invisible for the inhabitants and visitors. The river will get a wide bed, giving the room for the spring melt, it will be a defined and variable edge.

One emergent area is that now known as design fiction (Sterling, 2009; Hales, 2013), spawned from the earlier approaches of Dunne and Raby on critical design and more recently its extension to what is termed speculative design (Dunne & Raby 2013). Design fiction has been posed as prospective addition (Bleecker, 2010; Morrison, 2013; Malpass 2013) to modes of constructionist inquiry (e.g. Koskinen et al. 2011) that are typically realist. Design fiction is crafted to help us reach beyond the here and now and its deigetics (e.g. Sterling, 2009), influenced by popular cultural and science fiction narratives. It is cast poetically as a mode of speculative inquiry (Markussen & Knutz, 2013).

Seldom do we see design fiction being taken up as part of design pedagogy. Less still do we see it being explored in a mode of experimental educational investigations concerning pressing social and ecological issues facing design (e.g. Figures 3 & 4). In this paper I take up this challenge with respect to climate change and urbanism as part of a wider research project in to a future arctic. I argue that design fiction has considerable potential as a way of engaging with complex, emergent and potential issues and areas of designing and design-based inquiry more broadly, educationally and research-wise. 'Futures literacies' (Miller, 2007; in the plural) is a term being taken up in Futures Studies and this paper orients it to design pedagogy and design fiction. I frame this research into design educational design through inquiring into learning about design fiction through design fiction (Lindley 2015).

Exploring a para-pedagogy

Our para-pedagogy of design fictioning was crafted as an adjunct to the existing studios and their more factive and formative character. The adjunct is akin to the notion of an expanded classroom (Sefton-Green, 2013; Erstad 2014). This related to practices of extending 'mappings' developed in context of potential future urban development of Longyearbyen and its landscapes. LYB 2050 may be characterised as an experiment in para-pedagogy due to its adjunctive yet anticipatory status: it looked beyond the issues and contexts of today that the studio courses covered thoroughly on site in the town and over a full semester ending in juried exhibitions and external assessment. Through creative individual and co-production, LYB 2050 was devised on emergent terms as an articulation of a prospective climate change oriented urban design and cultural landscape fiction.

Pedagogically, the work connected the term multiliteracies (Kope & Kalantzis, 2000) to the term futures literacies from Futures Studies where it is still used sparsely to refer to developing competencies to work with scenarios and foresight methods in developing alternatives to pre-scripted strategy-type approaches to planning and development (Morrison 2016). We investigated what futures literacies might mean with and for students of urbanism and landscape who were invited to anticipate imaginatively alternate future scenarios through multimodal fictional narrative, not the factive and strategic mode of much futures work. We took the concept of anticipation and worked it narratively with reference to science fiction discourses, literature and media, as well as un/natural narrative (Alber et al., 2010) that is patently non-mimetic and chronotopically fluid in character (after Bakhtin, 1986). The work drew on students' immediate experience of learning and designing on location in the studios, with access to local experts in urban planning, the sciences as well as key community actors. However, LYB 2050 reached into imagined not probable, yet possible and plausible materialisations the future built urban arctic city and its lifeworlds.The space for experimentation on site and, subsequently, back in the design school in Oslo, was one that was made material by multiple mediational means. These included: oral discussions, walking and discussing learning about the context, handwritten and computer produced narrative scenarios, lists of questions, the use of personas, pencil and water colour

sketches, computer rendered images (collages, superimpositions, ironic realist visualisation), a research seminar presentation, and a longer term workshop process (still underway) to develop a fuller, final online joint mediation of contributors' work.

SPECULATIVE INQUIRY

From Critical to Speculative to Futures

The work of Dunne and Raby (2013) has posited imagined, non-functioning artifacts as ciphers and devices for thinking through potentiality and possibility in design, leading to the terms 'critical design' and later the speculative that is concerned with conjecture and surmising (Parisi, 2012). Design fiction may be seen as a still largely under-charted approach and potential mode of co-creation for nudging thoughts and potentiality in practices that foresight studies tend not to,. It may do so through the use of visual signals to promote anticipatory thinking and practices (Heinonen & Hiltunen, 2012). Design fiction already experiments with near future imaginaries yet has seldom appeared in Futures Studies (Morrison, 2015); recent work has argued for narratolol-gical apporaches (Raven & Elahi, 2015). There is clearly room for reference to what the fictional as a mode of thinking and expression - not just suspension of disbelief - might offer, allowing the subjunctive to be posed alternately, without the fetters of func-tionalist realism in modes of envisioning (see van der Helm, 2009). The notion of anticipation (Poli, 2010) is helpful for motivating us to think beyond the boundaries of policy and planning literatures, of strategic prototypes or potential outcomes in scripted scenarios. While narrative and design views feature in futures research on scenarios, strategy and decision-making views prevail (Selin et al., 2015).

Consequently, in pedagogical terms, by way of the work of Vygot-sky in connecting tools, mediations, contexts and production as mediated meaning making, design fiction may also be a way of working constructively and narratively to develop social construc-tionist perspectives on foresight methods (Fuller & Loogma, 2009). They may also assist us in attending to the shaping of engaging mediations that are conjectural projections about scenarios, events and participants in challenging and as yet unseen contexts of arctic climate change. These projections - filled with the leaps and jumps and problematising that non-mimetic, angular and mul-tiple perspective narratives allow - may offer us ciphers for wider engagement and design infused dialogues on design futures and climate literacies. They too are a major resource that is needed if we are to be able to engage productively and anticipatorily in world that lies ahead, partly inevitable, hugely contingent and increasingly slippery as it changes while we adapt to it. Sea ice is already shrinking resulting in rapidly elevated water temperatures and cycles of warming. Permafrost will melt and alter the daily life and infrastructural needs of cities such as Longyearbyen, as an excellent master's landscape design project has shown (Tynen, 2015). Today, we already move in urban and open landscapes where land and the sea are together changing and altered as are our points of vantage, our paths of perception and the need for action informed by design.

2. HAND DRAWN FUTURES

Where Wai Fang looked into a subterranean or sub-aquatic urban future, Rafaël Fournier elaborated hand drawn bird's eye details (Figure 5) the future town from above the harbour, encompassing the entire valley and one of the main peaks (later in the to be the site of a tragic avalanche). His image is deceptive: one has to look carefully to see that below the water that has risen are sunken and buildings. His accompanying handwritten text, draws the eye simultaneously to words and buildings as crafted objects. In contrast to many of today's data-centric visualisation of city futures, Rafael's fine lines and detailed imaging reminds us of just how delicate the future of just this one town already is. This was to be made apparent by the avalanche and the forces unleashed by extreme and rapidly changing weather. As a group we had already discussed the prevalence of digital tools and representations that pervade urban studies. I pointed the students to the work of CJ Lim and his earlier classes in which I participated into non-rea-slist imagining and illustration. Rafaël revealed how students own competencies that might be overwhelmed in the visual logics of sections, isomorphic pull outs and collages are necessary as part of changing urbanism literacies and regimes of representation but are also already in his hand and mind's eye, and also counter-im-age a tendency to hyper-realism and a future that seems at times unavoidably machine drawn.

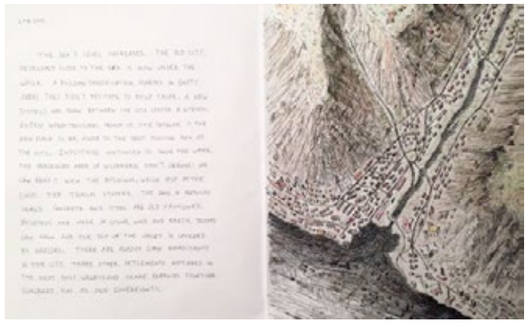


Figure 5. Longyearbyen 2050, Hand drawn narrative extract (tall buildings, a mosque, own sovereignty) with matching image. (Rafaël Fournier)

Design fiction

Since the introduction of design fiction primarily via the writer Bruce Sterling (2009) interest has grown rapidly into the role of the fictive in design imagining (Lindley & Coulton, 2015; Figure 5). Design fiction has sought to reach beyond the here-and-now into imagined near futures (Bleecher, 2010) that allow us to centre on contemporary issues yet not fall into a problem solving mode of functionalist design. Tanenbaum (2004) outlines design fiction an envisioning method for investigating futures and technologies (Figure 6), as a mediational Figure 4: Longyearbyen 2050, Hand drawn narrative extract (tall buildings, a mosque, own sovereignty) with matching image. (Rafaël Fournier) 7 tool for communicating with specialists and publics, and as providing physical prototypes to inspire and motivate design work and specifications. To date, design fiction has underplayed the role of narrative theory in deconstructing the often dystopian imaginary scenarios char-acteristic of their often techno-cultural diegetics (Kirby, 2010). Markussen and Knutz (2013) have focused on elements of a de-sign fictional poetics. Drawing on work in new narratives and un/natural narrative (Alber et al., 2010), Morrison (2014, in press) has argued for the application of Bakhtin's notion of the chronotope and related concepts in unfurling the dynamics of design fiction and its co-creation in a socio-technical and cultural frame that is non-mimetic. Personas have been explored to enunciate the views of hybrid animal-machine subjects: a wifi cow (Morrison 2011) and a rogue female urban drone (Morrison et al., 2013).



Figure 6. Trans species. (Kari Tønseth/Mary Shelly)

'I fear, my friend, that I shall render myself tedious by dwelling on these preliminary circumstances; but they were days of comparative naivety (happiness), and I think of them with horror (pleasure). My island (country), my beloved island (country)! Who but a native can tell the dreading (delight) I took in again beholding thy /trashy/ streams, thy /bulging garbage/ mountains, and, more than all, thy lovely /trash overflowing/ lake!'

No one can conceive the anguish I suffered during the remainder of the night, which I spent, cold and wet, in the open air. But I did not feel the inconvenience of the weather; my imagination was busy in scenes of evil and despair. I considered the being whom I had cast among mankind, and endowed with the will and power to effect purposes of horror, such as the deed which he had now done, nearly in the light of my own vampire, my own spirit let loose from the grave, and forced to destroy all that was dear to me.



Figure 7. Artificial light in former mines. (Simon Heidenreich

I always wonder what's behind that gate. All we can see from in here is the ever blue sky — or not. It's been the equivalent of around 245 years, hard to say exactly; we're in the fifth generation now roaming the tunnels. Born and raised, living and dying here in these halls of stone. In the morning with a clicking sound the skies turn on; we stand up, go to work, live the day until in the night the same clicking sound signals beginning of the night. Some people say it's not the real sun shining in the windows, but who are we to challenge the propagated truth of those who have to say something around here. It's easier that way.

I stand here in the far stretches of the tunnel system, a place where not many people go, where the number of skies is scarce…. The tunnels in this part of the settlement are much lower than the great roads in the centre; you can almost touch the blue. I suddenly feel adventurous. Against all advice and official notice I position myself under one of the skies that seems particularly near to the ground, stretch out my arm towards the perfect cyan square in the rocky surface above me and leap upwards…. Flickering, the sky turns … off; mid day. Small shards of acrylic fall onto my head, my facial expression aghast upon the sight of cables, diodes, cir-cuit boards behind the now transparent surface; like hundreds of colorful ribbons behind a spider's net. I look down to my left, back to the centre of the settlement — all skies still emit the same rectangular light falling onto the uneven surfaces of the stone…. I always wonder what's behind that gate.

Hales (2013) reminds us of how design fiction may be understood as an emergent mode of inquiry in its own right with an emergent taxonomy, tentative but potentially powerful in allowing us to ex-cavate representationally and methodologically, the past, present and future (e.g. Figure 6 with a parallel to Mary Shelly and her arctic inspirations). This is echoed in calls and examples as to how to experiment methodologically through co-creative design work within art, design and architecture (Knutz et al., 2013). Design fic-tion has more recently been taken up in the intersection between design speculation and ethnographic methods. Lindley et al. (2014) have extended this to how design fiction may anticipatorily provide inputs to design ethnography. Drawing on creative and analytical work in critical design, more recently re-labelled specu-lative design, interest in design fiction has also recently spread to HCI. Blythe (2014) for example has argued for applying techniques from literary and critical theory to scientific inquiry. Design fiction-ing is also central to the work in architectural pedagogy by Liam Young, explicated in an elaborate website that allows readers to relate to wider contexts of imagined embodiment in which physi-cal expeditions are mingled with digital multimodal mediation (e.g. Figure 7).

On climate change, few design fictional works currently exist though 'clim-fi' is an emergent narrative genre (Buckell, 2012). Collaborate authorship via a blog tool and website was applied in the context of the Future North project to articulate the views of a design fiction persona Narratta (Morrison 2015). A nucelar powered narwhal, Narratta was co-designed as a female fictive

articulate hybrid who offers diverse representational, informational and mediational views and critiques on the changing cultural and natural landscapes of the arctic. She dives and surfaces, floats and flies between the past, present and future in ways other modes of address cannot achieve.

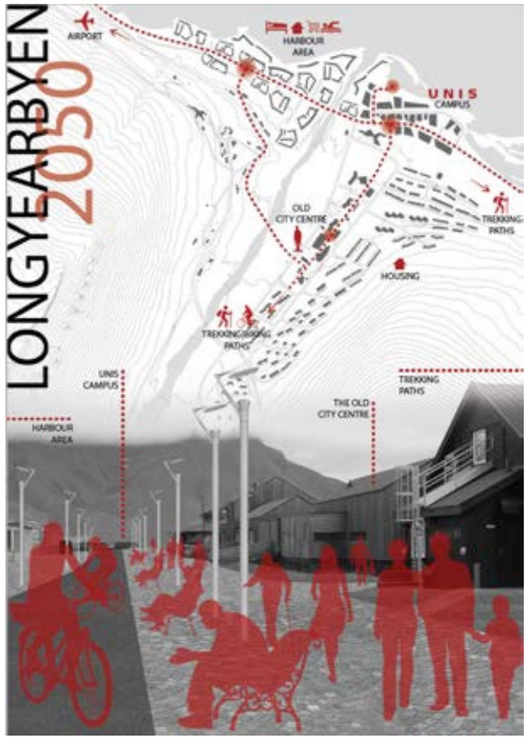


Figure 8. An urban game. (Veronica Gallina).

Design fiction pedagogies

Design fiction may operate as a mix of means to realising production based learning on the part of students where the reach is into future scenarios and contexts of dynamic development and rapid change, such as concerning climate change. The fictive in design fiction refers to speculation as a mode of making design work and making knowledge where students may invited to stretch beyond the identifiable parameters of given design briefs and established studio genres to explore factually and investigate creatively ways in which alternate, projected and conjectural futures may be approximated and anticipated. These are not unfamiliar modes of construction-with-reflection within mainstream design pedagogy; design fiction of course may be incorporated within formal design curricula. Design fiction may allow us to extend design pedagogical practices to informal, interstitial, limnal and emergent spaces for teaching and learning. These are spaces that may not be identified and charted ahead of entry and engagement. Thy are developmental and transdisciplinary and slippery, dynamic and transformational in processes of mediated meaning making.Our design fiction work was intended to be narrative in form and reach as opposed to ones in speculative design that have tended to be related to physical and visual artifacts that embody critiques of technology or raise awareness of contexts of use and experience.

3. ACTION SITES

I meet up with Veronica, a student I know from Tromsø. She's interested in embodied engagement. We briefly discuss her interests. Later I am astonished at the detailed urban game for future students she has developed, as if pre-empting futures literacies. Its visual explainer is a mix of a map, photography and block images (Figure 8) accompanied by a page of instructions for peripatetic game play. Her work contrasts to the sheet of paper passed to me in a café where I meet Benjamin and Simon, his partner on the course task to talk about visualisation in urbanism. Benjamin's image (Figure 1) is now accompanied by a handwritten set of needs and instructions, seemingly for an anarchist yet unspecified urban intervention. Passed to me surreptitiously between coffee and cake, beside a table of talkative natural scientists, this was a surprise act of participation. I quickly read this disruptive note from the future. Fiction in reality.

CHALLENGES

Future directions

LYB 2050 was a directed pedagogical intervention but it also an open ended experiment and process. It was not driven by script or plot working sessions, but through individually and shared elements being developed over time into a shared narrative. The pedagogical intent was not to quickly arrive at a final design fiction work. We leaned more towards voluntary exploration of ways design fiction may create spaces and instances for thinking and communicating imaginative connections to actual and perceived contexts, and conditions. To do so is to engage in the articulation of futures literacies, not merely as aspirations but through design centred multimodal narrative production. The hope is that in proposed linked 'storyshops' students of design and various local stakeholders and readers might developed a fully completed online work. Our goal is to abductively look beyond the critical moments of the present and further into the potential for design fiction and 'narrative futures' to help formulate and foster incisive and sustained critical thinking and action for, and in, the future.

4. PRESENTATION AND CONNECTION

The Future North project holds an international seminar with all the students from the Svalbard studios. As the initiator and convener LYB 2050 I make the first presentation of it to the whole group, connecting it as situated learning and learning location in a mode of anticipation. One of the contributions is startling (Figure 9). Text and image present a critical view on a 'heroic' occupation of Svalbard by the Norwegian state, The imagery ironically frames a geo-politics of climate change, with increased inhabitation and military vessels buttressing the image of the state's flag being hoisted, a reinscription of photographic and sculptural representations of US solders in Iwo-Jima, WW2. The students also see a variety of media representations: line drawings, collages, and lighting technologies into the now abandoned mines of Svalbard (Figure 7).



Figure 9. Svalbard occupied. (Minh Tin Phan)

THE CENTURY OLD SCHEME

The Norwegian sovereignty and righteousness-scheme had seemingly backfired as it became apparent that Norway was favouring its own corporations rather than following the guidelines of equality in the treaty.…

It was of course because of the global meltdown, the UN realized and withheld this information as it there were time to act and save billions of lives. It was clear when the world was engulfed by the rising sea level, the UN tipped only a few favourable nation-less companies and foundations, enabling them to buy into the "Arctic circle" which had turned into the only liveable place on earth. Why tip the world when there is only enough space for the top 5%?

…It was never the intention to preserve the pristine nature, but in due time, to create an image of incompetence, when it was the opposite. Forcing the UN's hand to overthrow the treaty and killing off all competition, which only a major conglomerate federation had influence to do. Meanwhile in total secrecy and in disguise, opting to buy back the land, free from treaties, a small nation was emerging as the new superpower. They were in reality whitewashing the land free from interference, moulding it into a super nation.

Design fiction may function as an apparatus for pedagogically and anticipatorily joining design practice and research with the transdisciplinary domain of Futures Studies. This might enrich notions and enactments of futures literacies through design and the activities and productive endeavours. It connects to situated cognition that is future located. A design para-pedagogy allows us to work outwards from an existing course located today with clear frames and facts about place and space, and to draw on these informationally and expressively as semiotic, narrative resources for critical envisioning (Figure 10). A participative design fiction making activity may also open out spaces for students and designer-researchers to reach into future scenarios as plausible, conjectural projections that engage us in thinking about inhabitable urban arctic futures. There is little doubt that we now need design knowledge, not only science, in anticipating the future, one that needs behaviour changes and new modes of living and working today and onwards. Design fictional pedagogy is a potentially rich form of knowledge building that extends notions of multiliteracies and foresight as one key to prefiguring our survival in the Anthropocene.…

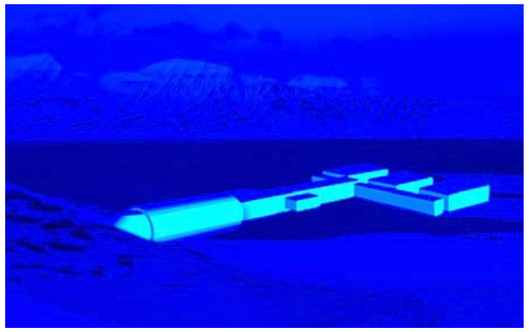


Figure 10. Global Seed Bank Data Repository revealed (Angeliki Dimaki-Adolfsen & Andrew Morrison).

Rasmus did not know what caused himself to pause right then. And so he stated who he was and asked a series of questions, a string of queries, as to how this seemingly empty repository was made.…

To his astonishment he heard an authoritative female voice in Norwegian explaining its structure and its contents, a repository for the word's seeds, a haven for the future of our biology, our food and species survival. … He waited out this poised sense of being, of legacy and prospect entwined, and let the next thought take shape. The hillside was filled with a vault, that he now understood, a physical refuge of sorts, perhaps covered over by a landslide, an ordinary site, nothing marking it out.

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Design in the real world

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ABSTRACT

Social design highlights design-based practices towards collective and social ends rather than predominately commercial or consumer-oriented objectives. In this paper we share staff and students experiences of participating in an interdisciplinary approach to social design and describe the key learning that arose from the implementation of a pioneering approach to the teaching of social design practice on the MA/MFA Design Programme at Sheffield Hallam University.

Taking the conference theme holistically this paper highlights the values of situating learning beyond the classroom in real-world contexts. Holism here relates to the recognition that learning is socially situated, that it draws on the individual strengths and resources students bring and that by involving practitioners from different specialisms, learning has the potential to bring about real-world transformation and change beyond the boundaries of the subject discipline.

The authors believe that social design has a place in design education as threats including precarious economies, social and financial inequities, global warming, war and mass migration are real-world issues impacting on world citizens and the planet. Opening up the right forums for discussion and experimentation, including the right mix of skills and knowledge to enrich discussion needs careful consideration and facilitation. Our initial work focused on placing social design within a module and employing cross-disciplinary and interdisciplinary working and learning. Our current projects widen the learning experience taking place over a year-long period with dual entry and multiple points. This work includes the local City Council, city residents and our DESIS Lab.

Keywords

Holism, social design, student engagement

INTRODUCTION

Today, the word "design" means many things. The common factor linking them is service, and designers are engaged in a service profession in which the results of their work meet human needs (Friedman, K., Stolterman, E, 2015). Over recent years the design profession had undergone profound transformation continuing to do today as designers and design pedagogy struggles to keep up with equally rapid changes is the world.

Social design can be defined variously. In his book 'Design, Everybody Designs: An Introduction to Design for Social Innovation' Ezio Manzini writes; in it's original meaning, social design is a design activity that deals with problems that are not dealt with by the market or by the state, and in which the people involved do not normally have a voice.

Armstrong et al (2014) make the following differentiation,

> Although all designing can be understood as social, the term 'social design' highlights the concepts and activities enacted within participatory approaches to researching, generating and realising new ways to make change happen towards collective and social ends, rather than predominantly commercial objectives (p.6).

This concept is not new. In one sense it has always been recognised that designers have an important role to play in contributing to society. John Ruskin, William Morris and Christopher Dresser writing in the nineteenth century were conscious not just of the quality of the objects produced but also about how they were being manufactured and the wider social conditions relating to their production. More recently social design has become synonymous with the work of Victor Papanek (1985) Ralph Erskine (1978) and Manzini. Manzini continues to champion design for social innovation through DESIS, Design for Social Innovation and Sustainability, a network of university design labs that work with local, regional and global partners for change and sustainability.

It is no coincidence that the recent renaissance in social design has occurred at the same time as the emergence of a number of large-scale, complex global challenges including shifts in population demographics and an ageing population, climate change, increasing social inequalities and the ongoing economic crisis, which continues to place increasing pressure on public sector finances across the World. The skills of designers to develop creative solutions in response to societal problems are being increasingly called for. This has led to designers being actively sought out by governments, development organisations and com-

mercial consultancies to address these broader social agendas. However the need for designers to be tuned into the impact of the social, economic, political and environmental contexts where design takes place is not confined to those who are already actively involved in this agenda. Authors such as Fry (2011) are calling for all designers to be more mindful of the bigger picture, highlighting how designers have inadvertently played a role in exacerbating many of the issues for which solutions are currently being sought. This is particularly in relation to the burgeoning consumer culture, climate change and sustainability.

According to Armstrong et al (2014) whilst designers are operating in an expanding field and claim to 'have the potential to address these [wider] issues, the question still remains as to whether they are adequately equipped to deal with them (Nussbaum et al 2010, Kiem 2013, Miller 2013).

Method

This question of how to equip future designers with the necessary knowledge, skills and understanding to work in the context of social design is one that the authors have sought to begin to address through changes in this case, through a taught interdisciplinary postgraduate design module.

This project began as the result of numerous conversations between the researchers leading to the shared wish to introduce the practices of design and health to students studying on the MA Design Programme at Sheffield Hallam University (SHU). SHU's Art & Design Research Centre's (ADRC) Lab4Living has, over many years built up considerable experience in the area of Design for Health and the MA Design Programme has more recently developed a growing interest in socially responsible design. The researchers are keen to encourage student's to explore the theme of health as linked to social innovation and sustainability, therefore working with MA Design students provided an excellent link between the programme and the Lab4Living.

The MA/MFA Design Programme positions authentic learning and experiential learning at its core, learning that is grounded in theories of learning and cognition (constructivist learning) which in turn refer to cognitive development and constructivist learning theories (Bruner, Piaget, Vygotsky). The project described here took place in one module during 1 semester (of 1st year) involving 36 students from 7 different countries representing 6 design disciplines. The module was focused on Socially Responsible Design and broken down into 3 tasks of varying lengths and complexity that demanded the students: consider the 'environmental footprint' their designing has, is and might create; produce a number of small but meaningful design interventions (Thorpe, A) that can have immediate and positive impact for users and finally; to work with the broad area of 'memory loss' but with a particular focus on dementia.

For many design students designing responsibly is not something that has been part of their undergraduate learning experience but with the scale and nature of the problems facing the world's population the researchers designed a module curriculum that focused students on a series of escalating 'projects' exploring socially responsible within a health care dimension.

Action research

The module used a participatory action research methodology (Swantz, 2008; Wadsworth, 1998). The intention from the outset was that the 2014/15 project inform subsequent project iterations that would further explore collaborative co-creation across the MA Design Programme, other academic courses as well as with external (to the University) stakeholders. This approach was seen to be cognizant with the principles of social responsible design and recognized the value of working in partnership with individuals and communities so as to identify strengths as well as needs and ensure that the solutions developed together were culturally appropriate. A number of social designers (Shah 2012 and Kemp-Rotan, 2012) have highlighted the issues when designers fail to recognize the innovative capacity of local populations with whom they are working.

The pedagogic approach taken was based on social constructivism (Vygotsky,1978) which sat well with the overall philosophy of the approach and its emphasis on social learning and collaboration.

In particular the researcher wanted to explore:

- How to develop the fundamental skills required by designers who hope to work in social design and how do we best equip individuals with these skills.
- Is action research and a teaching pedagogy underpinned by social research an appropriate approach to educating future designers in this area?
- What is the value added to students learning from participating in such a collaboration in terms of (for example) acquired competencies, social capital and motivation to work on socially responsible design projects?

Project outline

The overall socially responsible design project strategy focused upon enabling students to participate in socially responsible design practice, with a particular focus upon developing collaborative interdisciplinary student-generated responses to a number of design task set by academic staff. Thus far two projects have been completed;

- Project one focused on working in partnership with people with dementia (core project)
- Project two: took as its theme designing out vulnerability (elective project)

The inter-disciplinary make-up of the teaching team, drawing on expertise from health as well as design meant that students could be signposted to key resources. In project one initial immersive sessions offered students the opportunity to hear from specialists in dementia care, design for dementia and from the UK open knowledge sharing platform organization 'Fixperts' (www.fixperts.org) and ongoing contacts were made contact with a large third sector organization in the form of the Alzheimer Society. In this way students were supported in understanding ways of accessing communities and how to develop projects, avoiding Katie Swenson's (2012) concern regarding some curricula, which fail to 'teach students about how projects actually happen'. It also meant that support could be offered in relation to navigating and coping with the emotional complexities that working with people living with long-term conditions such as dementia could evoke. Within project one group-work afforded the students an additional form of support as well as an opportunity to see how students from different design disciplines approached the questions that arose.



Figure 1. MA Design and Occupational Therapy students at 'Create for Dementia', The Great North Museum, Newcastle-upon-Tyne, 30-31st May 2015

In project two students were able to draw on this experience and learning to work more autonomously, identifying their own topic, identifying people, groups and organizations with who they could work, drawing on support of the tutors as and when required.

Throughout both projects students were required to document the process through digital video as a research practice (Shrum et al, 2005). Methodologically in an action-research context this was a key aspect of the student learning in relation to reflecting back on these with different stakeholders, offering a way of capturing learning as well as building skills in reflexivity. These films also provided a vehicle through which to disseminate the project and will form learning objects, to be viewed and used by future cohorts of students.

In terms of other aspects of learning and teaching practice, the utilization of social media and the affordances of Web 2.0 tools and services were core catalysts in enabling these project, the related communication and collaboration across the boundaries of discipline, location and timetables.

Results

Working in partnership with individuals and community groups, the students utilizing their design skills in real-world situations and created a number of sensitive, creative and credible responses which were greatly valued and validated by the individuals they worked alongside.The quality of work was such that students were invited to disseminate their work within the broader services and communities where they had worked. These partnerships were extremely affirming for many of the stakeholders who had not worked with designers or design students before. Many spoke of valuing what they had learned from the students. In the words of one practitioner, head of a service [...]

> 'I learned a lot from them [the students]…I am thrilled that the students are receiving education on dementia and how it impacts on our society. Thanks to the two students who went on to develop their ideas by designing an interactive memory cabinet for people living in twenty four hour care. The design proposal was recently presented to a group of occupational therapy colleagues and was very inspiring.'

Case study: Dudley and Geoff – Memory Project. Gillot, Gulliford,Richardson.

'Dudley and Geoff'. In this Project 3 students worked collaboratively with Dudley, an aging male with mid-late term Alzheimer's and Geoff his son who acts as his full time care-giver. The students' aim was to find way by which they could assist Geoff in is daily role. Through a series of research visits and activities with both Dudley and Geoff the students created a link with Dudley's past through his deep-rooted interest in railways.



Figures 2. Dudley & Geoff courtesy of Gillot, Gulliford, Richardson

Buy using railways as part of the project, the students worked with Dudley's immediate community in the form of neighbours who had little to no prior knowledge of Dudley's condition. A short video of the project and the project outcomes can be found on Vimeo.com using this link: https://vimeo.com/126396168. Another project undertaken in the module can be viewed by using the following links: https://vimeo.com/126483920.

During semester 2, MA Design students are asked to pick a live externally focused project from a list of projects proposed to them by academic staff and 'clients'. One project offered; 'Designing out Vulnerability' asked students to find ways by which they might work to address the broad theme of vulnerability with students choosing to work on the topics including homelessness, suicide, eating disorders, international studentship and social phobias. For one student, their work on understanding vulnerability issues is leading to developments within the university. This work has is also leading to discussions with an external business interested in developing the result of the project so the findings may be applied across the Higher Education sector.

The work produced by students has been recognized both nationally and internationally with invitations to present at conferences in both the fields of design and health. The potential of the work will live well beyond the projects.

Students interviewed after both projects 1 and 2 have described the transformational nature of their experience. It has expanded their role as designers in relation to how they think about design, about the places they may work, the types of design project they might offer.

The impact however has not only been with regard to design practice, it has spilled out into their personal lives. Students have spoken about an increased awareness of how they utilize resources, of their personal response to issues such as homelessness, ageing and disability. A number of students have continued to extend and develop their interest beyond the classroom, continuing to work on socially innovative/responsible design practice.

There were challenges. All videos were shared with participants who spoke of the value of being 'given a voice' to share their experiences. Yet in spite of this and of having formal permission from participants to share the videos some audiences have questioned the ethics of this. Some of the contexts of social design can by their very nature be emotionally challenging and students need to be supported and mentored to help them to navigate these. For some students the principles of social design challenged their fundamental understanding of what design and design practice is. As Emerson states,

> 'a socially responsible design practice may take on any number of forms for intervention, education or advocacy… at a certain point, a socially responsible design practice may cease to be recognized as design at all'

However, the overwhelming feedback from students was of the value of engaging in authentic learning;

> 'through this approach, I came to realize that I have transferable design and communication skills and the capacity to research unfamiliar subject areas sufficiently to be able to make a valuable contribution which can be applied to broad ranging themes and problems' (MA Design Student)

Discussion

This project represents an important first step in building understanding of how to develop curricula to equip students with the skills required to work in socially responsible design.

Social learning theory (Bruner) posits that isolated facts do not take on meaning and relevance until learners discover what these tools can do for them. Our study very much reflects this position and closely corresponds with Siemen's (2004) assertion that true learning occurs when the learner is able to make personal connections between the learners' own goals and the broader concerns of the discipline.

Social design sits well within the ten design elements that underpin authentic learning experiences (Lombardi, 2007). Our approach corresponds well to these: it is based in real-world experience, required sustained investigation and required the students to examine the situation from multiple perspectives. Students worked in collaboration with stakeholders and end-users developing and in doing so developed a level of cultural sensitivity, so central to practice. The value of cross-disciplinary working was particularly highlighted, reflecting very much the recommendations of the report, Social Design Futures, commissioned by the Arts and Humanities Research Council.

However if this change is to be supported and sustained it is important to design educational opportunities so that they are sustainable. Communities Of Practice are made up of groups of people with a common interest who act as peers as they explore issues within a particular context. Lave and Wenger (1991) assert that new peripheral (or partial participation) community members learn from the active members of a community, and learning occurs as they are gradually brought into an active role or full participation in the community. The process of moving from a position of legitimate peripheral participation to full participation within a community of practice involves sustained activity and requires time for the ontological shifts that must occur. An ontological shift is "the re-assignment or re-categorizing of an instance from one ontological category to another" (Chi & Hausmann, 2003, p. 432), or simply put, a reconceptualisation. The sustained engagement of a community of practice creates a supportive framework for cultivating participant ontological shifts as members reconceptualise their roles from individual experts to members that facilitate co-generated content.

We are at the beginning of this process. Initial indications are that we have the foundations in place for ongoing development of this community. Stakeholders who have experienced the potential that design can make are keen to continue their involvement in future projects.



Figure 3. Page Hall District, Sheffield, UK. Courtesy of R.Bateman.

Conclusion

The work undertaken constitutes a small study into teaching social design within a Postgraduate Design module. The authors believe that social design has a place in design education as threats including increasingly precarious economies, financial and social inequity, global warming and war are real issues impacting on world citizens. Opening up the right forums for discussion and experimentation, including the right mix of skills and knowledge to enrich discussion needs careful consideration and facilitation. Our work to date has focused on placing social design within a module and employing cross-disciplinary and interdisciplinary working and learning. Our current project (2015-16) widens the learning experience and is taking place over a year-long period with multiple entry and exit points. This work includes the local City Council, city residents and design students and will finish in October 2016.

Borrowing from work within the health sciences the researchers; one designer, one occupational therapist, will be looking closely at a values based enquiry (VBE) and value based practice (VBP) models and considering their appropriateness for the teaching of social design (Fulford, K W M). VBE emphasizes that self-awareness, the professional values of care and compassion, and an awareness of the values of others are central to the students developing an identity. The researchers are interested to find out if through the development of VBE for design, staff and students will approach the challenge of social design naturally rather than seeing social design as an option or 'add-on' to already overflowing design curricula.

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2025: Forecasting Futures

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ABSTRACT

Design is changing radically. Re-shaped by disruptive economic, technological, market and supply factors, design has become more open, collaborative, agile and socially engaged. Against the backdrop of a Government policy that undervalues art and design education, increasing accountability measures and a design industry that lacks a unified voice to articulate its needs, universities face significant challenges in their ambition to develop and inspire the design talent of the future. Using the example of a particular unit of study called Global Design Futures and an associated co-design project called 2025: Forecasting Futures (www.forecastingfutures.co.uk), this paper considers the significance of engaging students in techniques to envision the future as a means of providing research but also as a powerful tool of critical transformation in its own right.

The live and co-design project which formed part of the unit 2025: Forecasting Futures involved the organisation of an exhibition, conference and series of events. The aim was to empower students as co-responsible learners with co-learning being fluid, adaptive and developed through practice, sharing and reflection. It is argued that by using future forecasting tools and strategies to examine the major forces disrupting our world and the landscape of design, students are encouraged to think about design as a core capability and strategic asset in managing an organisation's business aims and objectives. The paper explores how the 2025: Forecasting Futures project helped to raise awareness in students of working strategically with design as an agent of sustainable and ethically responsible change and social innovation.

Keywords
futures, forecasting, co-design

INTRODUCTION

Design is changing radically. Re-shaped by disruptive economic, technological, market and supply factors, design has become more open, collaborative, agile and socially engaged. Against the backdrop of a Government policy that undervalues art and design education, increasing accountability measures and a design industry that lacks a unified voice to articulate its needs, universities face significant challenges in their ambition to develop and inspire the design talent of the future. Using the example of a particular unit of study called Global Design Futures and an associated co-design project called 2025: Forecasting Futures (www.forecastingfutures.co.uk), this paper considers the significance of engaging students in techniques to envision the future as a means of providing research but also as a powerful tool of critical transformation in its own right.

The live and co-design project which formed part of the unit 2025: Forecasting Futures involved the organisation of an exhibition, conference and series of events. Experts from relevant disciplines were invited to make predictions about key global trends and the resulting provocations were promoted on a bespoke website with a call for responses. The themes of Digital Disruptions, Architectural Visions, Ageing Populations, Consumer Lifestyles, and Cultural Institutions elicited a variety of creative responses, which students curated into an exhibition. From a pedagogic perspective the aim was to empower students as co-responsible learners with power being shared with the tutor. Co-learning was fluid, adaptive and developed through practice, sharing and reflection. The transdisciplinary project encouraged peer critique, critical thinking about goals and the involvement of students in creating their own learning context.

This paper explores how the 2025: Forecasting Futures project helped to raise awareness in students of working strategically with design as an agent of sustainable and ethically responsible change and social innovation. Marc Augé (2015) defined innovation as a 'social fact' and the project explored design as a process that concerns all aspects of society and its participants. Here design was construed as a critical process that challenges and transforms 'the defining routines, resources and authority flows of beliefs of the broader social system in which it is introduced' (Westley, 2010). The unit and live project challenged students to develop critiques of current design practices and to envision the changes required for a more sustainable future.

I argue that through using future forecasting tools and strategies to examine the major forces disrupting our world and the landscape of design, students are encouraged to think about a different kind of designer. The designer becomes a strategist with a social focus who understands design as a core capability and strategic asset in managing an organisation's business aims and objectives. Strategic design can be examined within the context of social trends such as the sharing culture and circular economy, green growth, disruptive innovation, hyper mobility, new communities and the search for wellbeing. The case study of the Global Design Futures unit and 2025: Forecasting Futures project demonstrates an approach to engaging students in thinking about the future in terms of achieving social as well as economic impact and in effecting meaningful and positive change.

Futures Studies

Future Studies has commonly been associated with fashion and forecasting trends and perceived as a commercial practice lacking a valid conceptual framework. A view of futurising as fuelling the engine of capitalism, exploiting value and being ideologically compromised has historically limited its use in an academic context. However as major forces such as urbanisation, accelerating technological change, the ageing population and increasing global connections come together to dramatically transform our world, an understanding of the future has never been so important. Future studies/trend forecasting/futurology has been increasingly adopted by organisations, institutions and nations as a means of predicting alternative futures and managing perceived risk. As such the time appears to be apposite to reconsider the value of Future Studies for students studying design at Higher Education level.

A growing interest in speculative design stimulated by the work of Anthony Dunne and Fiona Raby at the Royal College of Art has produced a strand of Future Studies where design has a new role in relation to future practices and alternative futures. Dunne and Raby argue that 'Design speculation can be a catalyst for collectively redefining our relationship to reality' (2013, p. 6) and that rather than predicting the future, can open up discussion, dialogue and debate for further collaborative exploration. The crucial point is that designers should not envision generic futures for all, but work with experts in examining a preferable future for a given group of people. The importance of examining the everyday in terms of revealing the realities overlooked in broad future visions, including inequalities which such visions, strategies and plans can reproduce has also been a concern of the 'Everyday Futures Group' based at Lancaster University.

It is argued (Zadar, 2010) that we cannot predict the future but instead can only study ideas about the future through envisioning alternative and preferred futures. Zadar (p. 184) proposes that there are four laws in relation to Future Studies with the most important one being that it is a 'futureless' discipline (2010, p. 184) and useful only in the present as a means to change people's perceptions and galvinise them into action. Appadurai (in Yelavich and Adams, 2014) highlights that there is an obvious kinship between design, innovation and newness and that design is 'a natural ally of futurity' and can 'mediate the relationship between the long-term logics of sustainability and the short-term logics of fashion'. The importance of questioning the status quo is emphasised as is the necessity of capturing differences in terms of societies, cultures, temporality, life-stages and geographies. The role of designers in social change is further considered by Manzini (2015) who analyses their contribution in addressing complex organisational structures, social problems and political issues (2015).

These developments suggest that the study of design is beginning to include an academic and contemporary perspective on Future Studies which has historically been under-researched and under-theorised. Future Studies/Forecasting has moved beyond giving fashion style advice to becoming a political tool. By scanning social, cultural, political and environmental changes, design can play a role as a strategic resource that supports innovation and change. Rather than being regarded as a purely commercial practice, futurology can be a generator of change in itself and as Petermann (2014) argues, can have considerable reach through its entanglement with the creative industries.

Case Study

As a response to the changing context and nature of design practice, the School of Design at London College of Communication, University of the Arts London has extensively reviewed, revised and developed its course portfolio. In terms of the culture of design, the discipline is becoming increasingly fragmented, multidisciplinary, critical and socially engaged. As design becomes more open-ended and its boundaries increasingly permeable it has moved beyond graphic, product and interior design to encompass design thinking, sustainable design, service design, interaction design, social design, co-design, design activism, critical design, design cultures and design writing. Employment opportunities have shifted with a rise in small design studios and more graduates adopting freelance and portfolio careers.

Against this backdrop there is a need for students to engage with the wider context of design, to research thoroughly into the political, ethical, economic, social, technological and cultural conditions impacting on their discipline and to be able to envision alternative futures for design practice and its impact on the world. In order to address this need and to pilot the delivery of a form of Future Studies, a unit called Global Design Futures was introduced at postgraduate level into a number of courses and a range of future-focused Options offered in the second year of all Design School undergraduate courses. For the purposes of this paper the focus is specifically on the Global Design Unit and an associated live project undertaken by students on the MA Design Management and Cultures course.

The Global Design Futures unit examines the practices, theories and methods involved in forecasting futures including predictive, interpretive, critical and participatory approaches and anthropological, ethnographic and utopian thinking. Using an active learning model where students produce an online trend forecast and organise a Futures exhibition they gain first-hand experience of using tools for understanding and interpreting data, predicting change, forecasting and envisioning global design trends and exposing the limitations of current policies and discourses on economic growth and ecological sustainability. Students develop an in depth understanding of the key trends disrupting and reshaping the political, economic, social, technological and cultural terrain and of the role of the designer as an agent of change in crafting the future.

The Design School is committed to working with students as partners using a range of strategies such as co-design projects; working together in the development of new academic provision; enhanced roles for course representatives; and piloting student inclusion in the iterative development of units and assessment briefs. The Global Design Futures unit was planned using co-design methods where students participated from the outset in considering the scope of topics to be covered, the nature of the live project and related outputs, how the learning outcomes would be delivered and assessed and ways of working individually and collectively. This was achieved through participatory workshops using a range of brain storming and scenario planning methods.

An example of one of the methods used to elicit alternative visions of the future was scenario planning. In this case it was introduced as a tool for strategic thinking. The aim was to help make sense of change, to identify trends that will affect the future and through imagining possible scenarios, to open up debate and consider strategies to address future realities. In order to generate discussion among the students the workshop was configured as a card game with a set of rules and a creative outcome required. A game using Horizon Cards (designed and developed by the author of this paper) was played which involved group work, scenario creation, the use of Wild Cards and students visualising their chosen scenario through the creation and naming of a model or prototype (a variety of materials was provided for students to build a 3D visualisation of their concept).

On the basis of key design trends identified by the students, the unit delivery team put together a range of workshops which covered topics such as: What is Future Studies?; No Age - General Breakdown and Positive Ageing; Alternative Economies and New Business Models; Urban Futures – Cities Responding to Global Challenges; Utopia and Dystopia - Vision, Methods and Critiques; Digital Disruption - New Information Technologies; Immersive Futures – Sensory, Experimental and Interactive; Wellness and the Cult of Health; The Future of Spirituality and Compassion; Fashion Futures – Forecasting Fashion Trends; and the Future of Luxury. This was underpinned by a reading list which set the context for each topic, provided a theoretical framework and encouraged a critical analysis of imagined futures.

The output from which the learning on the unit was assessed comprised an online Global Design Trend Forecast proposing five key international trends based on detailed primary and secondary research. The unit also included a live project which was agreed as an exhibition with catalogue and related events, designed and curated by the students. The concept for the live project was that five invited key speakers would each write a short provocation on a major trend, which they considered to be transforming the landscape of design. The provocations were publicised on a bespoke website (www.forecastingfutures.co.uk) and interested parties invited to respond with a short paper, artefact or performance. A student panel assessed contributions and the outputs formed part of the exhibition alongside their own contributions. The exhibition and events were formally scheduled into the Public Programme of Events at LCC and also involved a Discussion Dinner with a range of invited expert guests. An evaluation of the project was conducted at the close of the unit to understand student perceptions of their learning and to gather feedback from which to improve the unit at the next stage of delivery.

Findings and Conclusion

Initial findings from the project indicated that students began with an instrumentalist perspective on forecasting and adopted a predominantly technologically determinist approach to speculating possible futures. A linear view of technological progress suggested a variety of scenarios in which the human condition was held in a delicate balance to its relationship with the unstoppable forces of digital development. However, as the live project rolled out and 'expert' voices were challenged, a stronger and more confident view of human agency in addressing complex issues emerged. There was no intention to inculcate students with a social design agenda in order to meet societal expectations and global challenges but by enabling healthy dissent rather than proselytising or presenting design for positive change as a form of dogma, a productive, critical and open dialogue emerged.

The project of considering the future of Future Studies is ongoing with further work planned to test forecasting methodologies extrapolated from current data, trends, research and technologies. The aim is to discover ways of interrogating the plurality of possible futures by forging a discursive space from which insights may emerge. The purpose of this short speculative paper has been to suggest that Future Studies has critical, discursive and political power and can be a tool of transformation in its own right. By taking into consideration the methods, processes, and specificity of contexts, it is possible to challenge current inequalities. Critiquing visions of the future offers a means of recognising and disturbing power relations, acknowledging where particular futures have been silenced and considering ways in which we can craft the future differently.

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Smart pedagogy for the future of design

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ABSTRACT

Innovation leads to unexpected solutions, and students' future relevance lies in their ability to think abstractly and embrace emerging technologies. Based on this premise, the Internet of Things Project was conceived as a cross-university inquiry of speculative thinking as a pedagogical tool. Faculty from two universities tasked their students with the design of a new "smart" technology to solve an everyday problem. The speculative nature of the project broke from typical artifact-based student learning, focusing instead on the origination of a purely theoretical concept. Removing the demands of a fully realized final deliverable freed the students to invest significant time in abstract ideation. Any discomfort with the challenge of limited restrictions and atypical expectations was tempered by a series of activities to mitigate fear and champion risk.

This paper examines the benefits of speculative thinking in the design classroom. It outlines practical strategies for implementing an experimental "smart" project requiring students to think in the abstract. Faculty will share their observations of students continuing to utilize speculative problem solving beyond the singular Internet of Things Project. The writers argue that curriculum must foster a culture of designer as influencer and innovator, challenging students to push beyond the limits of their technical knowledge and to embrace an open and speculative outlook towards user experience.

Keywords

speculative thinking, interactive, Pedagogy

INTRODUCTION

"Graphic design will save the world right after rock and roll does." (David Carson). Although Carson is selling both artistries short, there is merit to his flattering comparison. Rock and roll is organic, speculative, free-ranging. Likewise, design is no more static than rock and roll. Constantly evolving, design interacts with socio/political influencers, the needs of new audiences, and emerging technologies. Demands for an "encore!" do not come easily. They require an impressive show of problem solving from designers able to adapt to unanticipated challenges. Just as guitar-makers upped their game to keep up with the pace of free-flying musicians, design educators must elevate their pedagogy to prepare students for this astonishing change of pace.

In considering ways to expand existing pedagogies, the authors took direction from the AIGA Designer of 2015 Competencies list, which outlines a set of skills required for the designer of the future. Of particular note, is number six, the "ability to be flexible, nimble and dynamic in practice" (AIGA 2016). Given that students' thought processes in navigating challenges determines how nimble-minded they will be as designers, we theorized that speculative thinking would allow them to be more adaptive.

Speculative thought promotes the development of theoretical concept rather than practical application (Wells 2006). As a pedagogical tool, it teaches students to value themselves as influential thinkers rather than producers. The authors are inspired by Dunne & Raby, whose provocative practice champions speculative design as change maker. Some may discredit speculation as merely an idea, but according to Dunne & Raby, it is "because it is an idea that it is important. New ideas are exactly what we need today." By embracing speculative culture, "we might see the beginnings of design dedicated to thinking, reflecting, inspiring, and providing new perspectives on some of the challenges facing us" (Dunne & Raby, pg 88).

To begin experimenting with the best way to bring speculative thinking into the classroom, the authors designed the Internet of Things (IoT) Project. We diverged from typical artifact based student outcomes to focus on idea as final deliverable. Knowing that our students often measure their worth by the success of visual design, we framed the project as an exercise in freethinking, encouraging open outcomes as a way to mitigate students' fears. The promising results are evidence of students' ability to embrace an atypical methodology and put its outcomes into practice.

Methodology

Project Framework

The Internet of Things (IoT) Project was assigned in the spring of 2015 to students enrolled in AR 471 Design for Web II at Avila University and DESN 387 Information Architecture at Kansas City Art Institute. Students worked in teams to propose a theoretical 'smart' technology concept described as a "life-hack" - to help manage one's daily activities in a more efficient way. The project timeframe was limited in scope to encourage speculative ideation rather than production. Each team's concept was submitted with written rationale and process documentation including: audience research, storyboards, wireframes, and animated prototype of functionality. Results were posted to a shared project blog for cross-institution discussion. Students voted on which final IoT solution best satisfied the needs of the identified audience.

Intended Learning Outcomes

- Utilize speculative thinking in the design of an interactive solution for a defined user audience
- Apply collaborative process in the solving of a design problem
- Demonstrate an understanding of the potential for emerging technologies

Internet of Things (IoT)

Internet of Things is a form of machine-to-machine technology, allowing us to connect everyday objects and environments to the internet (Johnson 2015). Sensors are the building blocks of the IoT today. Categorized as "nearables" and "wearables", sensors enable responsive technology in smart objects and environments. Ubiquitous home wifi and cloud computing has empowered the IoT to become seamless in our lives - we find ourselves constantly accessible and IoT is positioned for growth.

The field of IoT is embedded with future-positive possibilities but inherently there are risks. These devices collect real-time information leading to privacy and security concerns. Once a user adopts a smart object for their home, they indirectly record a pattern of use reflecting their time at home. If the app knows when they are home, then how else can that information be used? IoT is ripe for classroom discussion, challenging students to consider the benefits and inherent questions.

Collaboration

Research shows that net generation students (born between 1982 and 1991) are team-oriented and social. They value the development of meaningful relationships with professors and peers, are versed at collaboration, and have participated on teams their entire lives (Oblinger & Oblinger 2005). Active learning for this generation requires fewer lectures and more discussions, cooperative learning, and group projects (Wilson 2004). We embraced this proficiency with collaboration by structuring the project as a team based, cross-institution initiative - concurrently taught between two different institutions. Both instructors began with the same project prompt, initial research, and timeline. The stipulation to communicate with an outside institution heightened students' awareness of the topic, shifting their reference point from an egocentric origin to an awareness of this discussion in the outside world. Our students shared a project blog to refer to research, facilitate a critique dialogue, and upload their final solutions.

Design Charrette and Rapid Prototype

Framed as a short-termed collaborative challenge, the design charrette model employed group process in the development of ideas as solutions to the assignment. The short project time frame (three class periods, equivalent of nine contact hours) forced students to work quickly, keeping focus on rapid prototype and abating concerns about a fully realized portfolio piece. Within the design charrette, groups began the ideation process utilizing a matrix to chart connections between offline everyday problems, audience research, and possible solutions. Students then built analog prototypes, focusing on the function and touch points of the experience while minimizing surface details such as typeface and color selection. They were forced to think about the process of moving a user through a task flow, relying on a storyboard to map this progression. The best prototype was translated into digital form and presented to the class for feedback. The final project outcome required high-fidelity wireframes emphasizing idea development instead of iterating look and feel or coding. Many groups added extra moments of interactivity and motion to enhance meaning, working above our expectations, implying that students are eager for more polish than a prototype affords.

Play

As faculty, we struggled with how to guide students through a project that diverged from typical process, timeline, and outcomes. We were asking students to think more than design, work in groups, and complete an atypical assignment in an abbreviated time frame. In researching methods for sparking student engagement, we landed on the concept of play. Psychologist Carl Jung states, "The creation of something new is not accomplished by the intellect but by the play instinct." Play is the most basic form of learning. It is a safe place to test ideas, break rules, and cultivate a sense of authorship. Mihály Csíkszentmihályi, Hungarian Psychologist, identified play as a flow state, a mental state marked by complete focus and absorption in the activity at hand (TED 2004). When students enter a flow state, they are actively engaged, absorbed, and challenged. Their minds are primed for creative thinking at an optimum level. The marriage of play and interactive design seemed a natural fit for the IoT project.

Before students began working on the project, we introduced the Makey Makey, an arduino created for children, to break the ice and foster a playful environment. Arduinos are microcontrollers, small portable computers often programmed to do a limited number of tasks. They provide an opportunity to hack and create a machine to machine connection, in essence the IoT concept. Our students thoroughly enjoyed the activity, playing with any conductive material they could instantly manipulate to become a video game controller, digital camera, and piano. The simple act of play was extremely successful in establishing proper tone and mindset for students to begin the ideation process.

Evaluation

Students were assessed on the standard professional practice of presentation skills, participation, and efforts at establishing a collaborative learning environment. More importantly, students were evaluated on their strength of concept and adaptability throughout the process, using the rubric categories below. (language from internal academic department assessment at Kansas City Art Institute)

- Possess skills of independent inquiry and effective research through critical engagement with sources of information
- Ability to deal with ambiguity
- Ability to give up a treasured thought in the face of evidence
- Embraces discovery during the research process; searches creatively and asks questions

Discussion

The IoT project was a resounding success for the students and faculty involved, offering key takeaways and direction for future improvement.

1) Don't underestimate students. We had serious concerns about our students' ability to handle speculative thinking, and their comfort level amidst ambiguity. Our concerns were clearly misguided. Students welcomed the change of pace and showed excitement in tackling something new - proving students are more nimble minded than we may give them credit for.

2) Tone is important. Striking a playful tone and supportive language when introducing the project was key in establishing a high-spirited, open attitude in the students. We acknowledged discomfort and eased concerns by reminding them there was no wrong answer to the problem.

3) The project should be implemented early in the curriculum. Both groups of students in this study were at a junior or higher level. The quality of results left us wishing we had introduced the concept of speculative thinking earlier. We view the IoT project as a natural fit at the sophomore level, especially as digitally native students continue to advance in their technological fluency and eagerness for collaboration.

Conclusion

The drumbeat of change is increasing in tempo. Like any gifted musician, a designer must learn to keep up with the beat. Our research, through the Internet of Things project, has shown that speculative thinking is one instrument students can use to help them anticipate changes in rhythm. By establishing a playful, collaborative learning environment, we were able to increase student comfort with the concept of thinking in the abstract. The students proved to be surprisingly adept at tackling this challenge and continued to utilize speculative thinking in future projects. Do we think that design will save the world? No. Do we feel our rock star students will give it their best shot? Most definitely.

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Between artistic frictions and users' adaptations: educating open design

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ABSTRACT

This paper discusses the Open Design program at Willem de Kooning Academy (University of Applied Sciences, Rotterdam) in the undergraduate program (Social Practice) and the Master Design. Open Design is commonly described as the design of open-ended objects, open processes or systems; online knowledge dissemination; creating personal relevance (Abel, van, and Klaassen 2011, Avital 2011). It mainly refers to two traditions: engineering (open-source technology) and participatory design (social relevance). Additionally, we can also witness an emergence of 'author driven' approaches, exploring open design aesthetics and 'open authorship'. These question the author's exclusivity, embodying a paradigm shift in traditional notions of authorship ('post-authorship'). This paradigm - the conflict between artistic expression and user adaptations - provides a relevant context for art and design education. How could open design leave room for both the designer's and user's identity?

The Open Design program elaborates on its underexposed aesthetic tradition, investigating 'open authorship' in spaces where designers and participants meet. It explores 'the 'open form', an (art)historical view on openness from an author's perspective (Wölfflin 1929, Eco 1962, Hansen 1959, Raaijmakers 1988), through approaches like 'Cadavre Exquis', 'Design Autopsy', 'Collaborative Collection', 'Confrontation Piece' and 'Non-Expert Experts'.

This paper maps interpretations by both students and the people involved (from author to user driven scenarios) and discusses possible future approaches, like the open form related to cultural probes and the open design object as a tool for unexpected user research.

Keywords

open design, open design education, open-ended design

INTRODUCTION

In new, in-transition design practices of sharing, 'post authorship', user innovation and digital networked fabrication, art and design education requires new approaches. Within this context, WdKA initiated the interdisciplinary Open Design Program in the undergraduate program (Social Practice) and the Master Design. This paper evaluates the program (2011-16) by focusing on possible new forms of (open) authorship and roles of designers and users. It elaborates on the article 'On "Open" Authorship: the Afterlife Of A Design' (Herst, Kasprzak, 2016) by introducing 'usership' in order to describe the roles in the open design process. We outline approaches and outcomes from the undergraduate program and propose new questions about these roles.

Definitions: How is Open Design framed?

According to commonly accepted definitions, Open Design's properties include the design of physical objects; open production processes, open-ended products; online knowledge dissemination; personal relevance for all stakeholders. (Abel, Bas van, and R. Klaassen 2011, Avital 2011). This definition borrows from two traditions: engineering and open-source technology (digital fabrication) and participatory or human centered design (social and personal relevance). These secure the 'afterlife' of a design, iterations by its users.

What are the ramifications of this techno-social framework for art education and its specific context of authorship and aesthetics? 'Author driven' Open Design practices like Jens Dyvik's 'Layer Chair' for example, not only encourage user iteration through open source software and sharing but also through its adaptable form and 'open aesthetics'. This open- endedness questions the author's exclusivity, embodying a paradigm shift in traditional notions of authorship and reflecting the discourse of 'post-authorship'. Exactly this paradigm provides a relevant context for art and design education (Herst and Kasprzak, 2016).

Artistic frictions - openness and (post)authorship

To educate Open Design students, not only as engineers or social professionals, but also as creative practitioners, we need to explore Open Design's underexposed aesthetic context. Practice at WdKA has shown that the user-oriented approach of Open Design causes friction, for it is often associated with the loss of artistic control and authorship. What is the potential of artistic methods for Open Design education and defining 'open authorship?

Broadening the discourse: what could Open Design learn from the arts?

As an aesthetic framework we first propose the 'open form', an art-historical notion of openness from the author's point of view. Several perspectives can be identified:

- Formal /aesthetic: art historian Heinrich Wöllffin defines the "closed /tectonic –open/a- tectonic form" as a dynamic, interpretative from, allowing viewers the mental completion of the work (Wöllffin, 1929).

- Social: In his 'Open Form Manifesto', architect and pedagogue Oskar Hansen's describes the 'Open Form' as 'real' interaction between designers and users. (Hansen1959) From this anti-hierarchical perspective he proposed a strong integration of the social and the formal.

- Critique: artist Dick Raaijmakers' Open Form is a critique on technology's closed systems in consumer culture, comparing it to the closed structures of classical compositions. (Raaijmakers, 'The Fine Mechanics of the Open Form', 1988-1992)

- Interpretative: In 'The Open Work', Umberto Eco defines participation not only as interpretative but also as 'real': the author becomes a meta-designer who designs the parameters for audience activation. (Eco,1989)

In order to support the students' positioning in Open Design contexts, we employed these perspectives in the development of the program. This exposes them to different open design processes (aesthetic, material, procedural) and different roles (artistic, social, critical).

Aim and Method: Mapping authorship - 'usership'. What could Open Design Education learn from the user?

We additionally introduce the concept of 'usership' to further identify the roles in an Open Design context. Our framework for mapping the spectrum from author to user driven scenarios is based upon the following perspectives:

1. Authorship (student interpretations)
"The poetics of the "work in movement" (and partly that of the "open" work) sets in motion a new cycle of relations between the artist and his audience, a new mechanics of aesthetic perception, a different status for the artistic product in contemporary society. It opens a new page in sociology and in pedagogy, as well as a new chapter in the history of art". (Eco,1989).

How is openness interpreted, expressed and negotiated in the design, how is the designer's identity articulated in a user-related context? We looked at the use of the open form, knowledge dissemination and the articulation of openness in design statements. An example is the author-driven student project 'Exchange Knitting', a Frankenstein' collection based upon user-generated aesthetics.

2. 'Usership' (user involvement)
"Usership names not just a form of opportunity-dependent relationality, but a self-regulating mode of engagement and operation. Which makes usership itself a potentially powerful tool. In the same way that usership is all about repurposing available ways and means without seeking to possess them, it can itself be repurposed as a mode of leverage, a fulcrum, a shifter, and as such, a game-changer". (Wright and Aikens, 2013)

How have users and communities been involved and how have they affected in the design in the projects? To define 'usership', we looked at self-regulation, reciprocity, re- appropriation, repurposing and user iterations in the projects. An example is the social project 'Wheelshare', which intends to raise awareness for wheelchair users from bottom-up approach.

Cases: from author to user driven scenarios, new roles?

The interdisciplinary Open Design program explores how the open form is translated into design methods that incite participation. We evaluated the outcomes of the following courses: Cadavre Exquis (open form, user iteration), 'Confrontation Piece' (social, participatory storytelling) and 'Design Autopsy' (criticism). These are mapped according to scenarios of authorship – 'usership'.

1. **Cadavre Exquis: hybrid roles between authorship - usership**

Borrowing from the open form of the Surrealist Cadavre Exquis (a collective poem or drawing according to a participatory method (Breton, 1971), the course 'Cadavre Exquis' confronts students with the ramifications of openness for authors. It focuses on the user as an inspirational source for -sometimes unexpected- information. Students were challenged to create a 'design dialogue' by provoking participation. They had to select an 'original' work (a blueprint) and respond to it with another design (iteration 1). Then a second designer works on it (iteration 2).

An example is the 'Cadavre Exquis chain' (image 1), a redesign of a necklace from the 'Open Design Contest' (Waag Society, 2009). Students repurposed the original piece and made several iterations responding to each other's design, according to their personal statements (a protest against social media). Acting as both users of the design and re-designers, they experienced 'usership' and 'authorship' simultaneously. This assignment confronted students with fundamental concepts of Open Design: assuming a hybrid position as both author and user (open authorship) and experiencing design as a procedural, unfinished product.



Image 1. Cadavre Exquis iterations

2. Design Autopsy: authors as critical re-designers

The open form as cultural critique against mass production is a more radical approach in the second year course ‘Opening up, the (his)tory of Things’. It refers to Dick Raaijmakers’ Open Form as a critique on the closed nature of technology in consumer culture, like the closed structures of classical compositions. Both systems encourage audience passivity (Mulder and Brouwer, 2009). This course similarly responded to closed systems of mass production and encouraged students to perform a ‘design autopsy’ on a product, take it apart, explore it and transform it into a new object. The act of opening up a product, repurposing and transforming it confronted students with Open Design’s critical perspective. As consumers of a mass product (users), they had to take control of it by using their skills as a designer (author). An example is the ‘Humidi-clock’ (image 2), a repurposed vaporizer transformed into a clock. The design bears a clear signature of the designer, possibly preventing user adaptation. Openness is mainly expressed in the technical dissemination of the work (3D drawings). The accompanying manifesto however, encouraged ‘usership’ by leaving gaps in the statement for reader appropriation, as a textual open form.



Image 2. Humidi-clock

The course aimed at ‘taking control’ by repurposing mass products (as a strategy to create openness) and to a lesser extent on user iterations. This sometimes caused confusion with students. As ‘re-designers’, they interpreted Open Design as ‘the act of opening up’, thus behaving likes traditional authors. For a full understanding of an open design cycle, we will implement the open form more explicitly in the course.

3. Confrontation Piece: provocative authors and reciprocity

Whereas the second year is dedicated to questioning authorship, the third year focuses on ‘usership’, open process and reciprocity. The point of departure of the course ‘Secret Stories of Makers’, a Confrontation Piece’ was the exploration of Oskar Hansen’s view on ‘real’ interaction between designers and users through a design approach in which the social and the formal are intertwined. (Open Form Manifesto, Hansen 1959).

The course took place in a social Maker Space in Rotterdam West. The aim was to unveil local needs and unknown knowledge. How could people’s secret stories inspire the design and contribute to its relevance? Employing the cultural probe (Gaver, Dunne, and Pacenti, 1999), students designed a ‘confrontation piece’, a provoking intervention to discover hidden stories, knowledge and skills of local artisans.



Image 3. Confrontation Piece: public loom

An example is a public loom for collecting local artisan techniques (image 3). Students set up a human sized loom on a square, using alienating aesthetics and exaggerated dimensions. Their piece triggered various responses; from sharing unique weaving techniques to revealing intimate stories. These unexpected results transformed the loom into a tool for both skill and story sharing, delivering useful insights in the neighborhood’s daily life. The design embodies a social open form, expresses authorship though its provocation and simultaneously, encourages expressive ‘usership’.

The project ‘Memre’ (memory) focused on forgotten crafts from the Surinamese community. The aim was to open up and disseminate their knowledge for the next generations (image 4). The student discovered that Surinamese women used to make jewelry from local fruits and kernels. To re-introduce this into the lives of expatriate Surinamese, he designed a kit to inspire women to take up their 'craft' again by using similar Dutch fruits. For this design research tool, he used objects with familiar aesthetics (reminiscing the Surinamese Awara nut), a combination of Dutch and Surinamese materials. When testing, it appeared to trigger specific memories. This inspired him to design a new kit including a book to collect stories.



Image 4. Confrontation Piece: ‘Memre’

‘Memre’ shows openness in the research process (unexpected stories) and the research tool (open storytelling kit). Here, authorship is dedicated to ‘usership’ and ownership: people are encouraged to become authors and to develop their own (his)torybook. The symbolic incentives in the design mark the author’s presence.

These two examples show how the space between ‘authorship’ and ‘usership’ is negotiated through a social open form, familiar aesthetics and participatory storytelling. It shows the value of Hansen’s ‘real interaction’: the designer no longer relates to anonymous, invisible online users but to real participants, enabling a more inspired and informed design.

4. ‘Non-Expert Experts’: authors and amateurs

In year four, students continue to explore social open form. The minor and graduation program require critically reflection on open design, a clear positioning and self initiated projects. The minor program focused on communities who invent, design, and create, without being recognized as designers, artists, or even as being creative. This group of ‘non-expert experts’ (Kasprzak, 2014) is highly skilled but remains invisible. Because of their expertise, these communities are ideal for collaborations with design practitioners. The course invited students to disseminate informal knowledge in ‘A Collection and Compendium of Unusual Knowledge’. The groups ranged from road kill chefs, open source DIY synthesizer enthusiasts and miniature vegetable gardeners. The students used an ethnographic approach, spending time with their communities to understand them and their practices.

The minor showed two exemplary forms of authorship and ‘usership’. In ‘Exchange Knitting’, a fashion student collected techniques from knitting clubs and open knitwear specialists (image 5). She developed an online platform for knowledge sharing. While exploring collaborative aesthetics, she eventually used these different patches for her own ‘Frankenstein’ collection. Although her cardigans and dresses reflect both her and the users’ identities, she is explicit about her role as an author of the collection, thus embodying the friction Open Design causes in the context of authorship.

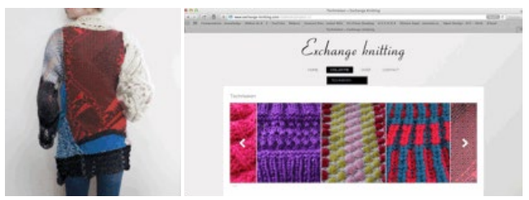


Image 5. ‘Exchange Knitting’: platform, http://www.exchange-knitting.com

‘Wheelshare’ shows a more hybrid form of authorship (image 6). The project aimed at raising awareness for the obstacles wheelchair users encounter in their environment. The student offered them an open source toolkit (3D file for a smartphone grip) and online platform (image 10). This custom grip enables wheelchair users to film their movements through the city and share these on the website. The student exploited the visual language of multiple perspectives and unusual camera views to raise curiosity (policy makers) and used this kaleidoscopic view to encourage users’ contributions. Authorship is particularly expressed in the provided visual framework, while ‘usership’ is embodied through the movies of the participants.

‘Exchange Knitting’ and ‘Wheelshare’ both implement contributions and aesthetics of their users. But while the maker of ‘Exchange Knitting’ explicitly claims authorship, the designer of ‘Wheelshare’ more clearly facilitates ‘usership’.

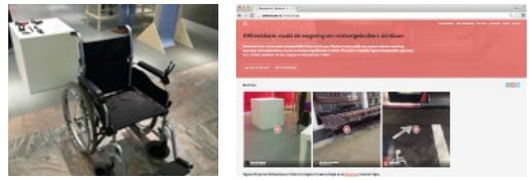


Image 6. ‘Wheelshare’, http://wheelshare.nl

A project that also expresses ‘usership’ is ‘The Home Factory’ (2013). This graduation project confronted people with their behavior towards waste. Creating a private circular economy, the student invited them to collect daily waste, process it and design a product by adapting a cast (image 7, 8). Authorship is shown in her methods for waste processing, workshops and the design of adaptable casts (a vase, a dish). In the final product, the designer is absent. Even more clearly than in ‘Wheelshare’, this project shows the ramifications of ‘usership’. The products show a specific ‘amateur aesthetic’, reflecting personal values. ‘Home Factory’ demonstrates the complex practice of ‘open authorship, where designers navigate and negotiate between user aesthetics, meta-design and other hybrid in between states.

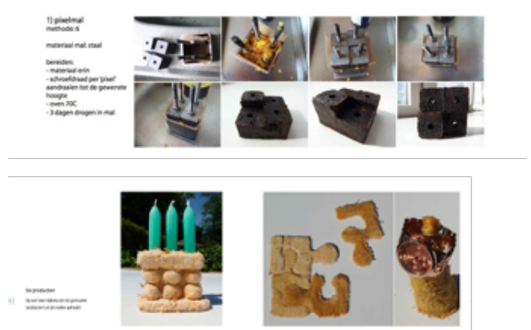


Image 7, 8. ‘Home Factory: open cast, user product

Conclusion

We evaluated the Open Design program (2011-2016) by focusing on new roles of designers (authorship, open form, Eco, 1989) and users (‘usership’, Wright and Aikens, 2013). How do students process the ‘artistic frictions’ in open design? We identified how they assumed different roles as authors for future development of the program.

The first two years introduced the open form and proposed strategies for critically opening up products (Raaijmakers) and open-ended formats for user iteration. ‘Cadavre Exquis’ showed how students were able to take a hybrid position as both authors and users of the design. As a valuable first encounter with open authorship, we will further explore this experiential approach. ‘Opening Up’ focused on ‘taking control’ by redesign and to a lesser extent on user iterations. Students assumed a traditional author position without fully experiencing ‘usership’. For a full understanding of an Open Design cycle, we will more explicitly emphasize the open product in the assignment.

Year three explored the open, social form (Hansen, 1959). Students negotiated the space between ‘authorship’ and ‘usership’ and experienced the value of openness in ‘real live’ interactions, as opposed to anonymous online communication. The public loom project showed the potential of an ‘open object’ as a tool for unexpected user research. To encourage ‘usership’, we will explore the ‘open probe’ in the next course.

Year four showed how students position themselves as ‘open authors’, from clearly author and owner driven (‘Exchange Knitting’) to a stronger orientation towards ‘usership’, where the author encourages ‘amateur’ aesthetics’ in the project (‘Wheelshare’).

The evaluation identified new views on ‘open authorship’, ranging from author to user driven and other hybrid models. Next steps include further developing the open form (Cadavre Exquis model), investigating of the experiential approach (role switching between author and user) and exploring the potential of open probes (a research tool for unexpected user contributions). We will focus on the author-user dynamics in order to keep the framework challenging for future Open Designers in a creative environment.

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Challenges to Team Ethnography and PAR: A Reflection of the Journey of Fashionthothgraphy

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ABSTRACT

This article provides a summary of reflections on the journey of ‘fashionthnography’, an experiential-learning programme in fashion and design education. The development of fashionthnography is a response to the increasing need to extend traditional course-based education to a more innovative, engaging and interactive approach of learning. The research team believes that fashionthnography offers a new platform for vocational and professional training and research collaboration. In this paper, we present four sets of challenges: 1. the implementation of new research designs and methodological approaches in communitybased research programmes; 2. The execution of multi disciplinary and multi-sectorial research and experiential-learning programmes; 3. the development of international research networks that enable collaboration between researchers, educators and practitioners from universities, research institutions and public and private organisations in various countries and education systems; and 4. the administration of diverse knowledge translation and mobilisation activities. We also show that the sustainability of any community-based experiential learning research programme requires collective support and long-term commitment: intellectual, administrative and financial. The ultimate contribution of this reflexive paper is to unpack the challenges and opportunities experienced by the founding members of fashionthnography during the implementation of community-based experiential learning and academic-practitioner collaboration.

Keywords

experiential learning, knowledge translation, team ethnography and participatory action research

INTRODUCTION

Community-based experiential learning and academic-practitioner collaboration have become important components of post-secondary education (Amabile et al., 2001; Ozanne and Anderson, 2010; Ozanne and Saatcioglu, 2008). Many institutions are exploring innovative ways to enhance student learning experience and re-defining the concept of research in the academia. For instance, experiential learning could include a variety of learning activities, ranging from co-op to exchange program, to community-based research to co-innovation programs. Institutions are seeking ways to identify best approaches to maximize student learning experience. At the same time, academic research is moving to a multi-disciplinary arena. Cross-disciplinary, mixed-method or multi-methods approaches are more welcomed and accepted by the academic communities since the new research model can provide a holistic understanding and solutions for the challenges and problems. In this paper, we focus on presenting the challenges of implementing an “innovative pedagogy” that involve multiple disciplines, multiple researcher approaches (e.g., participatory action research, academic-practitioner collaboration) and stakeholders (researchers, educators, students, and research participants).

This paper illustrates the research team’s experience throughout the ongoing process of launching and operating the fashionthnography website – a living archive of fashion research and teaching programs. The fashionthnography project is originated by a series of participatory action research (PAR) and ethnographic studies on fashion consumption and fashion design in Hong Kong and China. In addition to reporting findings in academic presentations and publications, the research team decided to disseminate and translate their research through the use of digital and multi-media technologies. At the same time, the research team views this is an opportunity to create a platform to broaden the methodological inquiries in fashion design and consumption research programs by bringing in a diverse research tools and knowledge translation mechanisms.

Qualitative inquiries and community-based research approaches such as participatory action research (PAR) and ethnography have become popular in academic and practitioner research. A group of business anthropologists and consumer culture researchers (Belk, Fischer, and Kozinets, 2013; Jordan, 2003; Moeran, 2005; Sunderland and Denny, 2007) has devolved years to develop and advance this research paradigm. In the past two decades, an increasing number of post-secondary institutions have begun exploring possibilities arising from the integration of PAR and qualitative methods in their research agenda and pedagogy. At the same time, researchers, educators, and practitioners such

as fashion designers, media, and marketers, are seeking ways to incorporate new research paradigm to industry practices. In the following sections, we present our reflexive note from an experimental open ethnography project – Fashionthnography – that we launched in 2012. Through the reflection of our journey of this applied research project, we seek to introduce the possibilities stemming from the digitalization of fashion ethnography and the use of transmedia storytelling in applied research and knowledge translation practices (Barister, Leadbeater, and Marshall, 2011). At the same time, we discuss the challenges of team ethnography and PAR that we experienced throughout the journey.

Background

Fashionthnography.com is a Hong Kong-based educational action research project involving a group of fashion students, academics, and professionals from the industry. The impetus for the project came from the fact that many fashion employers and academics are seeking ways to move beyond a theory-based curriculum and equip students with the necessary knowledge, real-life experiences, and skill sets to meet the most recent industry expectations. It was also the desire of the research team to resolve conflicts and misunderstandings between students/practitioners, theories/practices, and teaching/research by introducing a multifaceted, complex, and innovative research and education program.

Since its first launch in 2012, the research team of fashionthnograph.com has put in a tremendous amount of effort and time to develop the infrastructure of this living archive of innovative pedagogy. The team also explores different ways to better ways deliver the components and content to a diverse group of audiences. Multimedia such as video and voice interviews with the content expert, blog postings as well as shared research papers and presentations are part of the knowledge translation and disseminations strategies that employed by the research team since the first day of fashionthnography.com. Later on, the research team started connecting this experimental project to post-secondary education and academic-practitioner research collaboration.

Methods

In this paper we employed the research reflexive approach (Hammersley and Atkinson, 1995) to analyze our experience in team ethnography (Erickson and Stull, 1998) and community-based participatory action research (Bajgier et al., 1991; Ozanne and Anderson, 2010; Ozanne and Saatcioglu, 2008) throughout the years of implementing fashionthnography as an open research and experiential learning platform. Our findings are very much based on the research team's reflection throughout various stages of the fashionthnography project.

Our reflectivity provides an important self-evaluation and self-assessment opportunity to re-thinking the future direction of fashionthnography. As a research team as well as a group of researchers and educators in the post-secondary education system, our reflection showcases a diverse internal dialogue and conversation that researchers and educators may face in their everyday lives. Our reflexivity primarily focuses on four areas: (i) the delivery of qualitative research approach and methods to post-secondary students and junior researchers in the field of fashion and design; (ii) the shift from disciplinary to multi-disciplinary research programs; (iii) the essence and form of teamwork and collaboration in community-based research and experiential learning; and (iv) the innovative approach to facilitate knowledge translation. Our findings section highlights some of our memories, experiences, and insights to illustrate some of the challenges the research team encountered throughout this ongoing journey.

Findings

"It is easier said than done" – Although the research team had a strong vision of exhausting the pedagogical possibilities in fashion and design education by working collaboratively, the research team experienced many fundamental challenges during the implementation stage of fashionthnography.com. For instance, a shift in expectations in the fashion industry and the demand for new sets of knowledge and skills in fashion education caused the research team to rethink how best to structure the pedagogy and participatory action research design over time. In the very beginning of the fashionthnography project, the research team was to explore a new approach to disseminating research results and encourage conversation of fashion-/design-related topics among a wider group of audiences (e.g., non-academic audiences such as practitioners and the general public). Later on, the research team realized there is a potential to expand the scope of fashionthnography to collaborative research and the possibility of a "living archive" to capture different aspects of fashion and design research and education. The following content highlights some of the challenges that associated to the four focal areas we presented in the previous section.

Challenge 1: Qualitative Inquiry in Applied Research and Education

The first set of challenges that the research team encountered was that of educating students about the importance of qualitative research in fashion and design education. For instance, these challenges ranged from educating students about the differences between qualitative and quantitative research (Belk, Fischer, and Kozinets, 2013); differentiating between post-positivist traditions such as phenomenology, hermeneutics, and symbolic interactionism (Prasad, 2005); and teaching students how to conduct ethnographic fieldwork and analyze and interpret qualitative data to meet both academic and managerial expectations (Clifford and Marcus, 1986). In the field of applied sciences, quantitative research methods such as survey, modeling, and experimental designs remain the preferable approaches since the statistical results, and proven hypotheses are considered "scientific" in many researchers' mind. It is certainly true to some extent since numbers somehow never lie. However, many researchers in the positivist research camp ignored some limitations and deficiency in such quantitative approach. First, the "interpretation" of statistics result required a certain level of subjectivity. Researchers are tended to create a dialogue between their studies and previous literature and limited the exploratory essence of academic research. Second, the quantified data somehow skewed the meaningfulness of the studies or may not provide a deep understanding of the phenomenon. For example, most of the experimental setting asked research subject using Likert scale to report their feeling such as satisfaction, the level of like or dislike of a certain subject, and so on. Such quantified result may lose the opportunity to explore the composition of human emotion or what contribute to such emotion and responses. Qualitative research methods such as long interviews (McCracken, 1988) or ethnography allows researchers to examine issues in a more holistic, instead of abstracted, manner. However, it takes time for the applied scientists and practitioners to recognize the value of qualitative research and to accept an alternative research paradigm.

Challenge 2: Boundary Crossing – A Dialogue between Disciplinary and Multi-Disciplinary Education and Training

The second set of challenges was related to the shift from disciplinary to multi-disciplinary research and education. Traditionally, fashion and design education were considered to be comprised of a set of vocational and trade-oriented curricula driven by the requirements of the industry. However, the latest developments in fashion and design education emphasize multidisciplinary and multi-sectoral research and education, and encourage researchers and students to explore specialized topics such as sustainability, social innovations, and technological aid design (Palomo-Lovinski and Faerm, 2009). These specialized topics are multi-disciplinary in nature. Researchers from engineering, management, consumer studies, communication, public policy, economics, political sciences, computer sciences, design, and education as well as other disciplines not listed here are dealing with different aspects of sustainability, innovations, and technologies in their everyday lives. The research team has experienced challenges connected to the transformation of the education system during the implementation of the fashionthnography.com. Leaving the comfort zone is uneasy, it takes time for the research team to eliminate the technical and psychological barriers among participants of different academic training and background in the context of crossing the academic boundaries. The research team has adopted different approaches to elaborate the importance and value of multi-disciplinary education and research but still experienced a certain level of resistance. However, the research team believes the implementation of projects such as fashionthnography.com allows researchers to reconsider future research design, partnerships, and theoretical framework in their home disciplines and multi-disciplinary common grounds.

Challenge 3: Communicating Values among International and Multi-Disciplinary Team

The third set of challenges captured the challenges involved in managing communications within the international research team. Since the research team is composed of researchers, educators, and practitioners in different geographical locales and industries. It was an ongoing challenge to schedule meetings and match the project with individual schedule and priorities. Also, it was important to communicate the values of this innovative academic-practitioner collaboration project to all involved parties. For example, throughout the collaboration designers and organizations were invited to share their complex problems and special interests with the research team and students. The research team then started addressing these problems with different theoretical lens and research designs. In addition to bring in different perspectives to the research team, selecting participants and maintaining relationships with involved parties are ongoing tasks for the research team.

Students are active participants in fashionthnography as students' participation is part of the mandate of this experiential learning program. The fashionthnography.com thus allowed the parties to work intensively to identify solutions to the pressing issues. Since team ethnography and participatory action research are very much experiential and context-driven (Van Maanen, 1988), the research team has to constantly adjust the research program to maximize the value of the deliverables.

Challenge 4: Innovation Approaches in Knowledge Translation

Last, but not least, the final set of challenges was related to knowledge translation practices. The research team viewed knowledge translation as an important step for fashinthnography.com and agreed that academics have to pay more attention to the issue of how to present findings and ideas in a creative manner. At this point, the team launched several mini-projects and multi-media documentaries as new forms of knowledge dissemination. However, creating these new content format requires additional technical knowledge and skills. The research team has hired web designers, videographers, and assistants with different skill sets to manage new form of knowledge translation. In the future, the digital platform will be integrated with other forms of presentations such as exhibitions, conferences, workshops, and webinars. The team is currently seeking funding to support the development of mobile applications to facilitate academic-practitioner collaborations in the field of fashion and design. Cost, time and effort, therefore, will be a foreseeable and ongoing challenge for the research team.

Discussion and Conclusion

Our findings present challenges that our research team experienced in launching and sustaining the fashionthnography program. The identified constraints and problems, in fact, are addressable. To identify and recognize the value of multidisciplinary team-based collaboration and academic-practitioner joint exploration provide a strategic position for such innovative project. Of course, communicating these values to the diverse group of audiences may take time and effort, and resistance is expected. However, the team believes that the industry and the academia will value and demand new approaches to develop the knowledge community.

Fashionthnography also presents the possibility of different knowledge translation strategies. While many academics remain considering written publications are the only channel for disseminating research findings, academics and educators should re-evaluate the purpose of research and education. Many funding agencies and academic communities started to acknowledge other knowledge translation approaches such as interventions, public workshops and seminars, documentaries and ethnographic films, blogs, wiki entries as well as virtual/digital archives, art exhibitions and performances, researchers and educators could

explore innovative approach to engage academic and non-academic audience to the ongoing conversation about specific topics and challenges.

In conclusion, although many challenges and problems remain unresolved, our research team believes that fashionthnography introduce an innovative approach to future fashion and design research and education. The application of team ethnography and participatory action research is meaningful and provides an alternate way of reflecting on the pedagogical assumptions and research methods currently used in fashion and design research and education. More importantly, in engaging students, academics, and practitioners, the collaborative action research project opens up possibilities for future innovations in education and knowledge translation practices. In this sense, our reflections provide insights on how to address challenges while implementing an innovative pedagogy for post-secondary education. At the end, we, as a part of the knowledge building taskforce, are seeking innovative mechanisms to explore, comprehend, and disseminate to a diverse group of academic and non-academic audience.

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Synchronic design & design education in Lebanon

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ABSTRACT

A garbage crisis in Lebanon recently gave sight and smell to the country's underlying social and political problems, and it stank. The failure of public services, coupled with an influx of two million refugees, makes Lebanon a prime candidate for human-centered design efforts, and it has become a popular site for humanitarian work. With millions of dollars in international funding at stake, social projects in Lebanon have the potential to be profitable while also being impactful. Bruce Nussbaum's question — "Is humanitarian design the new imperialism?" — has initiated an important conversation about the power hierarchies implicit in design processes. His critique invites designers to imagine new methodologies for social design, especially for those initiatives taking place in contexts unfamiliar to the design team.

This paper, which draws on research the author conducted on design education in Lebanon, proposes synchronic design as a tool that overcomes the imperialism that scholars have questioned. Synchronic design involves remote mirroring of a design process laid out by a local designer on-site. Through synchronic design, a facilitator supports a designer by conducting in parallel the same research but in a different context. This move fosters a co-design culture in which the designer and facilitator compare data, exchange ideas, and troubleshoot tools and methodologies. Synchronic design safeguards against the top-down slant of imperialism by collapsing the distinction between the "expert" facilitator and the inexperienced designer; creating a sense of ownership and project sustainability; and challenging the idea that design is a universal phenomenon.

keywords

design education, Synchronic design, imperialism

INTRODUCTION

In Lebanon in the summer of 2015, a garbage crisis gave sight and smell to the country's underlying social and political problems, and it stank. For weeks, mountains of trash grew wildly on the streets of Beirut as the government refused to propose new plans for trash removal months after the previous dump site was scheduled to close. The failure of public services, coupled with an influx of over two million refugees fleeing from the Syrian civil war, makes Lebanon a prime candidate for human-centered design efforts, especially those concerned with social impact. It certainly has become a popular site for humanitarian work, and the number of international NGOs operating in this tiny (10452 km^2) country is staggering.[1] With millions of dollars in international funding, including grants from EU and USAID, at stake, social projects in Lebanon have the potential to be profitable while also being impactful.

At the same time that this is an exciting moment to pursue socially-minded initiatives in Lebanon, the fertile ground to implement humanitarian design here raises important questions about the role of design education and the legacy of imperialism in the Middle East and beyond. Bruce Nussbaum's (2010) provocative question — "Is humanitarian design the new imperialism?" — has initiated an important conversation about how social design operates across cultures and the power hierarchies implicit in design processes. He asks American and European designers operating in developing economies to reflect on whether their interventions benefit from or contribute to local creative forces rather than simply imposing the designer's ambitions onto unfamiliar terrain. Nussbaum's imperative, which does not necessarily challenge the good intentions of involved design firms, exposes the imperialist underpinnings of some design efforts in the so-called "third world." The top-down direction of such efforts run contrary to the ideals of human-centered design research, which privileges stakeholders' needs and desires over the designer's assumptions and sensibilities.

Nussbaum's critique invites designers and design educators to seek out new methodologies for social design, especially for those initiatives taking place in cultural, social, political, and economic contexts unfamiliar to the design team. This presentation draws on design research the author conducted on design education in Lebanon to propose synchronic design as a tool that overcomes the imperialism that Nussbaum and others have called into question. Synchronic design involves remote mirroring of a design process laid out by a local designer on-site. Through synchronic design, a facilitator encourages and supports a designer by conducting in parallel the same research but in a different context.

This move fosters a co-design culture in which the designer and facilitator compare data, exchange ideas, and troubleshoot tools and methodologies. This collaboration is distinct from the teamwork typical of design research, because the facilitator does not conduct the fieldwork with the intention of absorbing his data into a larger design process; his performance operates in a supportive role. Synchronic design, as this article demonstrates, safeguards against the top-down slant of imperialism by clearly by collapsing the distinction between the "expert" facilitator and the inexperienced designer; creating a sense of ownership and, therefore, project sustainability; and challenging the idea that design is a universal phenomenon.

For the greater good: social design in context

The turn among designers to pursue socially-minded projects, as Guy Julier (2013) argues, is the result of the very neoliberal policies that gave birth to design culture in the first place. Designers have begun to reject the capitalistic and consumerist drives of the design industry in order to create products and systems that seek to rectify social injustices worldwide. In this expanded understanding of design, practitioners can join the ranks of other do-gooders, like social workers and public health specialists, who affect change on a global level. This exciting turn in design, which is called either social design or design activism, has been described succinctly by scholars like Thomas Markussen (2013) as "design that changes the world," or as Julier (2011) has suggested, "a desire for amelioration, to make a 'better world.'" Such pithy definitions capture the possibility of this movement, but they also attend to some of the ethical soft spots concerning it. These understandings of social design plot the pursuit of social justice onto the whole globe and privilege the designer over local histories and contexts. When social design is understood this way, the entire world is the designer's canvas and the universal design process his brush.

Scholars and critics alike have begun to question the global focus of social design, especially when American and European designers implement projects in places like Africa, Asia, and the Middle East. These critiques do not so much challenge the impact that social design can have in these places, but rather call on design firms and training programs to reflect on the structures of power and systems of privilege implicit in design processes and curricula. For these critics, the use of governmental funding and the flow of creative knowledge from the global north to the global south reinforce hierarchies that obscure local histories and encourage division rather than collaboration. Examining graduate program curricula, in particular, Danah Abdulla (2014) even argues that such "projects exploit" the host community, because they benefit the student-designer but are so "ephemeral" that they cannot have a measurable impact on the community. Abulla's discussion thus creates an opening for design educators to imagine new ways of pursuing social design initiatives in the Global South. This paper and its proposal of Synchronic Design pour out of that opening, and in the pages that follow, I outline the basic tenants of Synchronic Design and possible applications in the future.

Background of the Project

One of the most important things overlooked by the imperialist turn in design is the role that local design education plays on the landscape. In Lebanon, for example, design education could benefit a great deal from social design projects at the same time that the students in its various programs could enhance social design initiatives. With the exception of a master's program in Global Design at Académie Libanaise des Beaux-Arts, the country's design programs are largely single-disciplinary and equip students with specific, often technical skills for a limited number of jobs in the design industry itself. Common programs include graphic design, interior design, fashion design, and product design, with graphic design as the most popular design discipline in the country. This imbalance in design programs, which overwhelmingly tilts towards graphic design, fosters an expansive advertising industry in Lebanon, which has strengthened the commercial aspect of design but has disregarded its social implications. Moreover, the country's struggling economy has pushed students into the workforce immediately after graduation to work for the design industry that provides most of its services (branding, advertising campaigns, etc.) to the Arab Gulf. For this reason, many design educators believe that assignments should be typical of the existing advertising or branding norms, which are limited to encouraging consumer behavior.

The aforementioned systematic challenges in the country's design education led me to undertake a project that aimed at integrating human-centered design principles into existing Lebanese design programs. The project was a grassroots initiative that brought together an independent collective of students, designers, professionals, and partner institutions in order to explore the value of human-centered design in Lebanon. It created a framework for building an innovative DIY design education model that plugs into the existing infrastructure of design education.

At the time that I completed the research for this project, I was based at the University of the Arts in the United States. My distance from the users and institutions most important to my project impeded my ability to undertake a robust design process. Because I was not in Beirut all the time, working remotely with my collaborators, who were mostly design students, was often difficult given Internet connection problems. This challenge was compounded by the fact that all of my collaborators had their own studies and projects to work on, and at times it felt like this project was a priority only for me. And yet my project could only exist through my collaborators who were in the field. They were my eyes and ears on the ground. What I have come to recognize is that the obstacles that I faced at this time mimicked the challenges that international organizations face when they come into a completely new cultural context and implement social projects. Without their "representatives" and the local community, these humanitarian projects cannot survive. Synchronic design was a tool I developed to overcome the challenges specific to my project, but I have since realized that its applicability extends well beyond the confines of a single project.

Since I was on a different continent, my involvement in the project was limited to online video conference calls and Google Docs. The fact that I was not physically there to participate in the fieldwork and support the students lowered their engagement level. In the end, only one member student remained active in the project. The impending collapse of my project forced me to seek out new methodologies to create ownership in the users that mattered most to the work I was doing. Synchronic design was born of my attempt to respect the limitations of my distance while also creating a system of engagement to support the designer with whom I was working. I begin to implement in Philadelphia the tools that the designer in Lebanon had created, which gave a global bend to this project and created opportunities for deep conversations about the work that he was doing on the ground.

Synchronic Design: the Facilitator's Role

Because synchronic design circles the ethics of globalization and imperialism, it depends on a carefully demarcated line between the facilitator, or the person who initiates social design projects, and the designer, a cultural expert who pursues research on the ground. The role of the facilitator in the synchronic design process is to support the local designer by conducting the same research but in a different context. The findings of the facilitator have little to no relevance to the process of the local designer. Instead, it is the "action" that provides support and creates a space to compare data, exchange ideas, and readjust and fine-tune methodologies.

The role of the facilitator here was not to create a new tool or impose an existing one, but rather to show the local designer trust in his process and his judgment. By scaffolding the work of the local designer by showing examples, providing him or her with a framework and an environment that allows for mistakes and failures to happen, the facilitator can encourage the local designer to create design tools and methods that are specific to their context, instead of borrowing from ready-made toolkits. The notion of failure here is essential, similar to the prototyping phase of the common design process. As Coughlan, Fulton-Suri, and Canales (2007) argue, learning is achieved faster by prototyping and failing early. It is after the "misstep" that both parties can debrief, assess, and evaluate the learning experience.

Synchronic design establishes an alternative notion of time, where there are no deadlines and no time constraints. What matters is that these processes (both the facilitator's and the designer's) happen simultaneously. In synchronic design, it's this simultaneousness that's emphasized over rigid, top-down deadlines and timelines. Danah Abdulla (2015) critiques ephemeral social design projects that are on a deadline. In these projects, she notes, groups of graduate students participate in community projects within the framework of a semester-long course and leave once the course or program is complete. Similarly, most design charettes or crash-courses in Design Thinking last only for a couple days, during which participants are expected to go quickly through the different steps of the design process in order to get to an innovative, out-of-the-box design concept. However, when the objective is to focus on the learning and the transferring of skills and making sure that participants are able to reuse these processes, or that communities are able to implement and sustain the project after the designers have left, it is important to steer away from deadlines. In synchronic design, it is important that the local designer moves through the different steps of the design process at their own pace, but what is more important is that the facilitator follows that same pace and does not rush it. This emphasis on pacing foregrounds the very role of the facilitator himself: supporting the local designer by acting as a resource, scaffolding his experience by mirroring his process, and allow for mistakes.

Synchronic Design: the Designer's Experience

When the facilitator mirrors the process and scaffolds the local designer's experience successfully, it can have a number of advantages to the local designer and therefore successful social design projects. Perhaps the most important corollary of synchronic design is the designer's engagement in a project that he or she did not necessarily initiate. Mirroring processes injects new energy into the project. Sharing examples, evaluating research methodologies, and accommodating mistakes also show the local designer that he or she is the context expert. Instead of trying to apply one-size-fits-all design toolkits, he or she can assess which tools and methodologies fit best with his or her particular context, which may even lead to the invention of new tools.

Even though not being physically in the same place as the local designer can be frustrating to the facilitator, it can have a positive impact on the local designer. In my own research, for example, the designer and I had established consistent communication despite the seven-hour time difference, bouncing ideas off of each other. However, we were not in touch during the interviews. When he started talking to people, he realized that he could not carry on with the activity, because the metal board he had brought with him — where the magnetic cards would stick — wasn't large enough to sort the cards on. Usually, a facilitator and designer would find ways around such obstacles together, or in our case he would stop and wait for our next conference call to brainstorm solutions. But he couldn't do that this time; he would lose momentum with his interviewees. Instead, he decided to hack his own tool, on the spot, in order to carry on with the interviews: he took advantage of the space he was in (a parking lot) and used the cars' hoods as his metal board. This was an important learning moment, because it emphasizes on prototyping and adaptation of design tools.

Such processes show the local designer in the field that he is the one leading the project rather than simply following a guidebook or an experienced facilitator's planned steps. This pushes the local designer to have agency over the project and take ownership of it, which commits him or her to moving the project forward when the facilitator is out of the picture. In my case study, the synchronic design method made the designer the owner of the project and gave him the confidence to take steps unfamiliar to him. Moreover, he was now eager to share his recent learnings with other colleagues with whom he works, which was a step towards building a network of responsible designers who can bring about social change through the use of the design process.

Synchronic Design builds off of the principles of DIY culture, and as Jonathan Lukens (2013) has argued, such DIY projects enable individuals and small groups to "exert power on their own." This issue of power is particularly important here. As Synchronic Design seeks to work against the pulls of imperialism, agency, voice, and the ability of a particular community to represent and intervene on its own terms become essential. Synchronic Design is not just a

[1] For example, the number of NGOs just working with the UNDP is currently an astonishing 58. See, http://portal.undp.org.lb/ngo/ngoindex.cfm

[2] This four-year-old graduate program enrolls students from a variety of educational backgrounds and teaches them principles of design thinking and encourages them to apply these principles to social design projects.

tool but rather a rallying call for design educators to seek out new methodologies to train designers and introduce human-centered design research, methodologies that are as sensitive and conscious of the history of imperialism as they are rigorous and thorough.

Conclusion

Synchronic design is still in its infancy and I haven't fully explored it yet, but its potential is vast. This method could be a way to reach out to communities that are in need for social design but are otherwise unreachable for various reasons like war, politics, travel, technology, and surveillance. Developing countries, underprivileged communities, refugee camps, rural areas, and war zones are usually the target for international NGOs and humanitarian organizations for their work and are often critiqued for their imperialist approaches. Synchronic design could also be a way to remotely introduce social design to conservative communities, where it is not regular for men and women to interact even on a professional basis. What I'm proposing here isn't overhauling the ideals of humanitarian work or social design initiatives. Rather I am suggesting the need for new methodologies that recognize the history of colonialism on a global level. Synchronic Design, like the humanitarian efforts that preceded it, seeks to empower local communities and create positive measurable change for global users.

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[3] For more on the relationship between Lebanese creative talent and capital flow from the Gulf Arab States, see Marwan Kraidy, "The Saudi-Lebanese Connection," Reality Television and Arab Politics: Contention in Public Life (New York: Cambridge University Press, 2009), 66-90.

Futures thinking through transposition

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ABSTRACT

Issues of climate change and sustainability are pertinent issues. In recent years, attention has shifted from forecasting and the promotion of defined future oriented design thinking to the notion of foresight and a vision of possible and potential approaches and expectations. Though there are other sources of literature were foresight is applied in the fields of policy domains and production or research for business and government, the field of design research, however, has developed at the same time to include a focus on 'design future' that take design inquiry away from the design of preferred futures only to discussion and explorations of how to go about finding alternative futures. This paper analyses ProtoHype, a project in a higher level education institution which stands on the futures plain. It explores anticipation strategies through the design foresight lens with the aim of sustainable design solutions. This is achieved by bringing together interested parties from all sectors to work collaboratively to enable sustainable development. The paper breaks down some of the anticipation strategies used by the participants in the project to achieve said goals. It is argued through this paper that Transposing students from their traditional learning environments into different learning contexts gives us the tools for foresighting and design thinking towards futures thinking and futures oriented design. A case study is given with step by step description through observation of one of the student's design for the project.

keywords

future studies, transposition, futures thinking

INTRODUCTION

Shaping design pedagogies for future studies through collaborative ecologies in situated learning spaces is what we as a transdisciplinary group of Master's students did on a design project titled ProtoHype. The project aims at exploring and describing alternate future solutions through casting light on sustainable design through contextual knowing and transposition. We were students from Oslo, Norway actively engaging in rural and urban Kenya to seek methods, processes and solutions for the anticipated future. This future is the plausible and reachable future which can be linked through what we call Design Foresight. We identify a research gap where Design Foresight aims to link design studies to future studies. Furthermore, we have identified challenging, yet key theoretical concepts that we aim to argue for through this paper, for instance linking anticipation strategies to future settings over duration of space and time restrains through the enactments (De Laat 2000) of future oriented design thinking to the conception of foresight and a vision of possible and potential approaches and expectations.

Studies from the work of De Laat (2000) advanced from the notion of enacted futures within future studies to what is now regarded as future oriented strategies through more recent work of Ahlqvist & Rhisiart (2015). This shift and movement within the theoretical framework and scaffolding of futures studies has created a space for exploration and description that we target through this paper and place Design Foresight in this futures space. We do so by post project reflections, discussions and explorations of the ProtoHype project through key happenings of student within situated learning spaces. We argue that these happenings facilitate the ability to design for contextually relevant design solutions for potential future societies by exploring alternate sustainable product solutions through this making process. We back up this argument throughout this paper by making use of the case study analysis of this key happening through techniques which include contextual photography, post project reflections and researcher's observations. Furthermore, we support these discussions by reflecting back on current literature focusing specifically on future studies.

This paper will introduce current state of literature and the research gap within future studies, and continue to explore a case study which embodies the process we followed as master's design students. Lastly, we conclude by discussing and contributing to current literature debates on future studies and we illuminate the role deign may play as a transformative catalysis for developmental pedagogies and contextual knowing through Design Foresight.

Aims

In recent years, research into design and futures has shifted attention from forecasting and the promotion of defined future oriented design thinking to the notion of foresight and a vision of possible and potential approaches and expectations. De Laat (2000) for example is concerned with enactments of the future. Early writings on design foresight highlight the dependence of desired futures and anticipation strategies (Deuten & Rip 2000). In the field of Futures Studies, this shift has placed attention on expectations (Van Lente 2000) that are posed in the future as a means to shaping that future but also in order to relate it to the present and to immediate and merging needs. Menéndez and Cabello (2000), as is often the case, relate foresight to policy making and solution determination, centering on a need to improve how policy makers deal with uncertainty. In general, much of the focus on earlier futures research has been framed around planning, strategy, scenarios and contexts of more predictive and deliberative outcomes.

Most recently foresight has emerged as a way to reach beyond the immediate and near future and into possible and potential ones. Foresight is now seen as a critical aspect of corporate and innovation strategies (Dufva et al. 2015). Work by Gary and Gracht (2015) looks at how foresight has been applied in policy domains and production and how countries and professional futurists collaborate to match future assumptions. Ahlqvist (2012) discusses the forward looking changing contexts of foresight research for business and government. The field of design research, however, has developed at the same time to include a focus on 'design futures' that take design inquiry away from the design of preferred futures only to discussion and explorations of how to go about finding alternative futures. The goal here is to investigate ways design can play an active and transformational role in shaping those futures.

Research Question

Therefore, the main research question of this paper is to ask: How can design studies transform and shape alternate futures and be a factor in Future Studies?

Methods

We describe the transposition of the ProtoHype project by analysing a key project example through a singular case study methodology. Case study methodologies lend itself to qualitative modes of inquiry within design studies. Therefore, we will utilise and revisit a mixed method of techniques that has proven to work for this method of inquiry, which comprises of post project reflections, contextual photography, meta-mapping and observers' reflections. This will be used to shed light and answer the "How" research question that has been posed in this paper (Yin 2003). This question will be answered by reconsidering the ProtoHype project, and analysing key themes that we elevate to the foreground of the discussions (Baxter & Jack 2008) that best meet the paper's proposition (Yin 2013). A proposition is used to guide the qualitative study and therefore our preposition states that Design Studies (Design as Usual: 'DaU') can be introduced to a radical approach which we call Design Foresight, and that through this approach Future Studies can be explored and described by making links through socio-cultural Design Pedagogy: Shaped by Masters design students. The unit of analysis is used within qualitative research studies to assist us in proving this proposition to be answered (Yin 2013; Baxter & Jack 2008). Therefore, our unit of analysis is the facilitation of collaborative ecologies within the ProtoHype project within situated learning spaces. A secondary unit of analysis is to analyse the how these collaborative ecologies shape alternate futures through contributions to long term sustainable options for local contexts and cultural settings. These units of analysis would therefore be interpreted through preceding literature discussions on transposition and collaboration with the purpose of illuminating the transposition within contextual immersion as well as the collaborative ecologies we have encountered as students. It has to be underlined that transposition is not merely geographical; however, it consists of transfer of the world, lived experiences, knowledge and ideas within a collective ecology of stakeholders.

Process

TRANSITIONING TO FUTURE STUDIES FROM DESIGN STUDIES

Few connections have been made between Futures Studies and Design Studies. This paper indicates how links may be made through a design based pedagogy that is also shaped by collaboratively master's level design students. We reflect on a specific project into design futures called ProtoHype. We present our descriptions and interpretations of participation and research when bringing together various stakeholders in designing for sustainable development, in and over time. Based in Kenya and Oslo, this project was developed to involve students in situated learning in the contexts of rural and urban Kenya. We argue throughout this paper that the process we followed as students in this project is necessary to deliver contextually relevant design solutions through what we call 'design foresight' (DF).

We identify that without DF the problem of achieving a change, or 'changing the change' as opposed to the activities of what we call 'designing as usual' (DaU) will not be achieved without a radical approach. This approach, founded in a socio-cultural pedagogy, comprising tools, contexts, culture and dialogue, stretches and reaches for alternate futures by creating alternate solutions through prototyping, sense making, within what we understand to be collaborative ecologies of design making.

One key example of such collaborative ecologies is represented in this case study. Under the ProtoHype project, students were transposed from Oslo to both urban and rural Kenya. The idea was to displace ProtoHypicals out of their usual learning environments to try and jump start their thinking on sustainability in different contexts, the diversity of culture and how it addresses issues on sustainability etc. Already stated in its manifesto; The ProtoHype project aims to provide quality education, to embed sustainability into the design curriculum, accept diversity, and encourage agency.

We take one such example of a ProtoHypical and going through the ProtoHype design process in rural Kenya. Students were taken round the local settlements and towns as a means of familiarizing themselves with the environment, insight searching, data gathering and inspiration searching. By experiencing first-hand, the various lifestyles and practices of the locals, students could be "influenced" in their thinking. Through observation, guided tours, interviews and video cameras students asked questions in interviews with people that they believe could help them better understand the lifestyles and cultures in which the people of the townships were accustomed to.

Case 1

One such student identified the rapid migration from locally woven artefacts and containers to cheap imported plastic. She identified the environmental hazards posed by these plastic artefacts were not sustainable environmentally nor economic as they were not strong enough to carry out the heavy duty jobs in the particular context, neither were they repairable, nor was there any proper local disposable methods for the products. She identified how these products were not only an environmental problem but it affected the local weaving culture thus affecting the economic sustainability of some others.

Through interviewing local experts, she gathered some information about the weaving culture of Kenya and narrowed it down to the particular weaving culture of the context in which she was. She then proceeded to interview other people from different nationalities (Ghana, South Africa, Norway, China) about the different weaving techniques/cultures of the various countries juxtaposing it with the Kenyan weaving culture.

She proceeded to research other methods and processes of weaving through more interviews with local experts, the internet and maker space sessions before merging them with the weaving culture of her country (China). She identified the shared and differences between the contexts in the techniques used, materials sourced, ideologies and styles and proceeded to find the common ground between them.

Having settled on the process, she proceeded to make a traditional Chinese sandal with locally sourced weaving material, by applying weaving techniques from the various countries. Though finally settling using tissue paper to make a prototype of the sandal, her anticipation of a dead weaving culture that would render the setting dependent on unsustainable and non-environmental friendly products, back casting through interviews with local experts, collaborative maker sessions, prototyping and design foresight, it is revealed that through prototyping within the collaborative ecologies of ProtoHypicals in motion, indigenous knowledge can be sustained for future design options.

Why 'Protohypicals' are Imperative as Transdisciplinary Actors

This design making is characterised by being a 'ProtoHypical': transdisciplinary actors and stakeholders with a variety of needs and interests who meet to jointly explore and devise shared alternative futures in which long term sustainable options and processes might be perceived, planned and anticipated for local contexts and cultural settings.

The concepts help us as master's students and as parties to wider research projects in design, climate change and sustainability to think ahead of how to link anticipation strategies and design foresight. We believe that through transposition ProtoHypicals can reach for alternate futures by shaping the long term Sustainable options for local contexts and cultural settings. This requires a vantage point to see into the possible and plausible alternate futures. We have found that inclusivity of Transdisciplinary actors may contribute to the contextual knowing with the potential of actively creating movement towards alternate future solutions. This movement is what links anticipation strategies and DF. As students in the ProtoHype project, we have experienced this movement and we acknowledge it for allowing us to generate contextual knowledge through engaging with transdisciplinary actors from respective geographical and socio-cultural settings. This gave us as primary access to local and indigenous knowledge through dialogue. As opposed to forward looking and anticipating for future alternatives, these dialogues delved into the ability to back cast into the past of cultures, contexts, tools, and prototypes. The ability to back cast while moving through DF is what we acknowledge as contributing to long term Sustainable options. This rear-view mirror approach to design practice within the situated learning spaces nurtured the ability for us as students to reignite traditional prototyping tools, such as indigenous material selections, manufacturing techniques and the cultural settings of prototypes over time. Revisit the case study presented in this paper to identify a Master student's movement from Oslo, Norway to rural Kenya to discover traditional Chinese footwear through prototyping with locally sourced weaving material, by applying weaving techniques from Ghana, South Africa, Kenya, Norway and China. These weaving techniques were shared through dialogue from ProtoHypicals of the mentioned countries, which further emphasise our belief that through transposition ProtoHypicals can shape the long term Sustainable options for local contexts and cultural settings. Additionally, this case study reveals that through prototyping within the collaborative ecologies of ProtoHypicals in motion, indigenous knowledge can be sustained for future design options.

In addition, ProtoHypicals who practice design making will connect ways foresight, as a mode of design inquiry, may be better linked spatially across timeframes and timescales and to processes of engagement with and by communities, along with the importance of contextual knowing and developmental pedagogies of transformation in design.

Discussion & Results

In reconsidering the ProtoHype project we examined the usefulness of the concept foresight, touched on futures thinking through anticipation strategies and to better support this actionable and change-in-the-future potential, we propose the concept of transposition. We believe that through transposition, ProtoHypicals can reach for alternate futures by shaping the long term sustainable options for local contexts and cultural settings. This requires a vantage point to see into the possible and plausible alternate futures and transposition is that platform. The concepts help us as master's students and as parties to wider research projects in design, climate change and sustainability to think ahead to how link anticipation strategies and design foresight. The ability to design locally and think globally, being Design as Usual (DaU) is challenged through long term sustainable options, due to the risk of solutions being local successes and global disasters. Hence we are continuing the discussion and narrative

on design foresight by asking: in which ways projects like Proto-Hype equips designers to not only win local “wars” but have an impact on a global scale, either spatially or instantly?

In summary, this is a radical approach to sustainability, as opposed to an incremental view on innovation that does not challenge core values and positions and leads to more predictable outcomes. This may repeat existing patterns but involve the transposition of design foresight added with anticipation strategies and you ensure contextually relevant solutions are developed. These solutions may be partial and prospective, and they may also be possible and filled with potential.

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Collaborative curricula

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ABSTRACT

The diverse population makeup of Jordan and the reputation of its capital, Amman, as a refuge city is a reflection of the Arab region’s turbulent history, making it an interesting setting in which to study design. More specifically, Amman’s contested identities provide a unique site for exploring a more participatory approach to design pedagogy. However, current design curricula are out dated and centred on extremely specialised, technical skills training to produce‘industry-ready’ graduates, leaving students with little room to develop critical skills, engage in critical practice or venture beyond their specialisation. Furthermore, it is disconnected from its context and milieu (places, people, environments and institutions that individuals encounter that shape daily life and inform their worldview). How can design education engage students with social, political and economic issues relevant to their daily challenges and encourage them to become active citizens in such an environment? In this paper, I describe the methodology and preliminary findings of on going PhD research investigating how design education in Amman can be more locally centred. This research considers three questions: 1. What philosophies, theories, practices, models of curriculum and pedagogy are appropriate references for design education curricula in Jordan to be more locally centred? 2. What shifts in design perception does this require and create? 3. Could the development of a more locally centred design education curriculum help advance the status of design as a discipline in Jordan, engage the public and help Jordanian designers contribute to the larger international discourse?

Keywords

Jordan, design education, design

INTRODUCTION

Reports and studies on education from various organisations and Jordanian scholars paint a bleak picture of the higher education system both in Jordan and regionally, presenting an extensive list of issues and challenges. Furthermore, since the 1990s, higher education in the Arab region has become extensively privatised. The market-driven privatisation of higher education – very pronounced in Jordan – has replaced principles such as ethics, community responsibility and citizenship building with “individual interest and economic rationality,” raising questions about the role of the institution “in the production of an educated citizenry capable – developmentally, technically, and ethically – of serving local, regional, and global needs” (Herrera, 2006, p.418).

While globally design and design education are undergoing transformations due in part to the blurring boundaries of the design disciplines and the introduction of new and more critical social practices, design in the Arab world continues to focus on the traditional disciplines rather than integrating emerging design disciplines (Sanders and Stappers, 2008). What’s more, the privatisation of education has led to an increase in design programmes being offered at the undergraduate level. Design however is considered a profit-making discipline for universities: low on the prestige hierarchy and able to absorb financially-able students with poor GPAs due to its un-competitive entry requirements, resulting in many students entering design with little to no understanding of what it is. This paper presents the methods utilised in conducting my PhD research and preliminary findings.

The Local

The local in this definition is not the development of a national identity or as an emphasis on difference such as East/West or modern/non-modern, it is an understanding of place, context, and milieu rather than being exclusive in a geographic sense. It is the relevance that design has on the lives of the audience.

Banking Model and Curricula

The findings on pedagogy in Jordan from reports and studies can best be described by Paulo Freire’s (2000[1970]) banking model where the educator deposits information and narration into the student. The content of this narration is “detached from reality, disconnected from the totality that engendered them and could give them significance” (ibid p.71). The student is instructed

to record, memorise and repeat without understanding the true significance of what they are asked to learn. It becomes mechanical, turning students into what Freire calls "'containers,' … 'receptacles' to be 'filled by the teachers," and limiting their scope of action to "receiving, filing, and storing the deposits" (ibid p.72).

Furthermore, curricula fall under the product/transmission model which revolves around setting objectives and targets, developing a plan, applying that plan, measuring the outcomes (products), and the transmission of subjects where students are told what they must learn and how they are going to learn it (Kelly, 2004). This model is usually an elaborate outline with documents for the teacher and the student and what Grundy (1987, p.31) calls a "teacher-proof curriculum document" which provides the teacher with step-by- step directions on teaching and testing.

An audit of course lists and study plans of Jordanian design programmes that I conducted illustrated a large number of skill-based courses where the student is rewarded for his/her technical expertise and aesthetic competencies – and the success of the professor's work is evaluated by how the result "conforms to the specifications of the syllabus" (ibid p.62).

This model is inadequate as it promotes a curriculum that renders education as transmission and instrumental as opposed to developmental by focusing on changing and moulding behaviours to meet specific ends.

Furthermore, recent reforms are concentrated onto a planning by targets approach which places the emphasise quantity rather than quality. It narrows education to a behavioural, instrumental, and linear activity that leads to a loss of freedom for both the students and the educators.

Participative Worldview

The nature of education in Jordan, and ideas that inform my practice, are the reasons why this research is grounded in ideas of participation and collaboration. It draws on co-operative inquiry and participatory action research in particular.

Co-operative inquiry is rooted in the idea that persons are self-determining, and they are the authors of their own actions. It is about involving people to contribute in the entire process as co-subjects and co-researchers (ibid). Full reciprocity is the ideal in this method, but not all those involved will contribute in the same way. Co-operative inquiry groups will "struggle with the problems of inclusion, influence and intimacy," leading to people taking on different roles where the quality and quantity of their contributions will also be different (ibid p.264). The manner in which the group is able to manage the differences that may arise will determine the quality of the work.

PAR is influenced by Paulo Freire's (2000[1970]) ideas of critical pedagogy. PAR is concerned with power and powerlessness, and its main task is to empower people to use their knowledge and experience to confront this power (Fals-Borda and Rahman, 1991). PAR has two aims: "…to produce knowledge and action directly useful to a group of people…" (Reason, 1998, p.269), through empowering the people to raise consciousness – "a process of self awareness through collective self-inquiry and reflection" (Fals-Borda and Rahman, 1991, p.16). It seeks to create an alternative system of knowledge production based entirely on the role of the people in the entire research process and building collaboration and dialogue that seek to empower, and develop a sense of solidarity amongst the community (Tandon, 1989; Reason, 1998).

Methodology and Samples

Five Phases of Organising Processes of Joint Inquiry (see figure 1)

The methodology draws on John Dewey's (1938) concept of inquiry – summarised generally by Steen (2013, p.20) "as a process that starts from a problematic situation, and that moves– by productively combining doing and thinking – to a resolution." Dewey's concept of inquiry is pertinent to PAR and co-operative inquiry with themes such as knowledge as instrumental, empowerment through reflection on practice and experience, communication and cooperation, a desire to improve one's situation, and exploring alternative futures, all being aspects found in the participative worldview. For Dewey (1938), organising processes of inquiry are produced jointly where "the aim is not to develop universal knowledge that represents some external reality, but to bring people together so that they can jointly explore, try out, learn, and bring about change in a desired direction" (Steen, 2013, p.20).



Figure 1. Five Phases of Organising Processes of Joint Inquiry

Data Collection

Data was collected in Amman, Jordan using interviews, focus groups, and design charrettes. The participants chosen were defined as key players throughout the project, who are essential to it, and who will have an effect on and/or be affected by the project. The choice of participants, falling under democratic co-design processes, meant equal representation amongst positive and negative voices.

Interviews

A total of 25 interviews were conducted with design educators and designers in Jordan. The interviews played two roles: to finalise the list of participants for the charrette, and to gain an understanding of design and design education from these participants to develop the questions for the charrette.

The semi-structured and open-ended interviews elicited views and opinions from participants on education, design, and design education. While many participants shared similar views, there were others that provided differing viewpoints leading to interesting discussions. It is important to acknowledge my own bias in exploring a locally-centric curricula and to keep in mind that some participants may be against disrupting the status quo.

Focus Groups

Focus groups were conducted with students only, which entailed a different recruitment strategy. The most successful method of recruitment was to be invited as part of a jury or to give a talk by educators I interviewed. In total, I conducted three focus groups with 15 participants from three universities.

Charrettes

To develop questions for the charrette, I developed a code book which served as a guide for the transcription. The main issues and statements discussed in over 200 codes were developed into 19 questions served as the starting point for the charrette.

Activities were developed based on ideas from the KJ Technique to develop the charrette activities. Charrette participants were provided with a brief for the workshop one week prior. With the questions pinned to the wall, participants were split up into two groups and were given allocated time to complete five activities in six hours.

Results, Findings and Conclusion

As the data from all three methods has yet to be fully analysed, I will conclude by briefly discussing the results and findings from the interviews and focus groups. The analysis revealed multiple issues, challenges and concerns related to design and design education in Jordan (what is) while also presenting suggestions on moving forward.

Discussions were passionate and participants were eager to share their ideas and interest in thinking of the future of design and design education.

Whereas the focus groups and interviews brought forward ideas on possible steps to transform design education, they were more individual and based on one person's opinion, through the charrettes, the process aimed to be entirely collaborative and would likely produce different results on possible solutions and next steps (what could be).

Several issues were identified by all samples of participants and others were also mentioned in the literature on education in general. The problems identified were long-term in nature: some were within design and design education in general, while others were related to education in Jordan and the culture overall. It is difficult to tell what types of results will arise from a collaborative form such as the charrettes, but it is clear from the initial results that all participants acknowledge there is a lot of work to be done. Through doing and thinking in the charrettes, the design community in Jordan will have the opportunity to develop the future- vision of design and design education together.

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Curriculum 3.0: enabling democracy in tertiary design education at a university of technology in South Africa

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ABSTRACT

It is expected that by 2035 over one billion people will be living and working as digital nomads. Moser (2014) considers “Architecture 3.0” as a new disruptive economic model for the architectural professions made possible through digital technologies. Today’s architects and interior designers need to be entrepreneurial, resourceful, innovative and resilient with the ability to simultaneously access various mobile technologies and use multimedia in non-linear ways. We therefore question: How do we prepare our students for careers in hyper-connected globalised economies?

Web 3.0 enables a space in which the machine forms part of the meaning making process. In “learning 3.0”, learning occurs increasingly between people and their hyper-connected devices. In a “limitless symbiotic relationship between human and machine” (Wheeler 2012) our mobile devices are able to connect data, applications and people though cloud computing, and therefore as we learn from our devices so too do our devices learn from us.

Using a literature review and a comparison of learner attributes, the findings are discussed and presented as catalysts for alternative approaches to design curricula. In keeping with principles of rhyzomatic learning, flexible responses are sought to the challenges of student protests regarding the cost of education and the relevance of westernised curricula. Flexible models of information exchange mean that students need to be taught how to learn and curate their digital learning environments with the lecturer as facilitator and mentor.

Keywords

Learning 3.0, Rhizomatic, 21st Century skills

INTRODUCTION

It is expected that by 2035 over one billion people will be living and working as digital nomads (2Geeks1City 2016). In this paper we consider this statement and question if the traditional design studio is no longer relevant, how do we prepare our students for careers in hyper-connected globalised economies? Based in a University of Technology in South Africa, faced with the reality of student protests regarding the cost of education and the relevance of historically westernised curricula, the implementation of a new curriculum for the Architectural Technology and Interior Design programmes offered the authors the opportunity to critically consider this question.

Architecture 3.0

Architecture as a profession emerged from a need to design buildings and historically architects were trained through apprenticeship. In the twentieth century this craft evolved into a profession, and closely aligned, the interior design profession followed suit. Governed by professional bodies as gatekeepers with codes of conduct, standards and educational requirements creating closed doors into a profession made accessible only through competency exams and membership fees. Practice and training for this practice was outcome based, centred around how to complete design and construction documents geared to deliver buildings and their interiors to those who could afford them as efficiently and profitably as possible. In the twenty first century due to the impact of digital technology, globalisation and concern for sustainability the traditional architectural studio is no longer relevant.

According to a report commissioned by the Royal Institute of British Architects it is expected that by 2025 this profession will have completely changed in response to the needs of globalised digital economies (Jamieson 2011). In future, it is anticipated that global multi-disciplinary consultancies will play a larger role in response to growth in emerging markets. Multinational teams that are able to deliver at a fast pace and low cost will increasingly carry out the work previously done by small to medium sized architectural practices. Developers will need to be able to generate, fund, realize and manage projects with little risk to the client. Due to accelerated time frames and risk aversion, sub-contractors offering highly specialized services will take on more of the specialist design and detailing within buildings thus absorbing some of the traditional roles and responsibilities of the architect. Multi disciplinary creative agencies offering problem solving services will be employed as consultants working collaboratively as part of larger teams on projects. These trends are already evident therefore it is envisaged that the role of the architect will evolve to suit these needs (Jamieson 2011).

Moser (2014) considers a new disruptive economic model for the architectural profession. “Architecture 3.0” was born out of necessity in a post 2008 economic climate and was made possible though digital technologies. In this model, fewer architects are registering with governing bodies and choosing instead to practice in alternative, more open and creative environments. Contrary to limiting their scope of work to designing solutions for buildings, architects are now “designing for solutions” which could apply to a wide variety of complex problems. This work is leveraged by collaboration and networking and facilitated by digital technologies. Trained to have a deep understanding of the tools of design, when applied to a broader context, the architect is able to maintain relevance in this millennium.

Rhyzomatic Learning

Literature consulted identifies trends and student attributes in response to technologically mediated globalised economies. Cormier (2010) considers that students learn in technologically mediated networks that are open and constantly growing. The metaphor of the rhizome is used to describe this model in which “the community is the curriculum” and learning occurs through sharing. This learning is also referred to as “learning 3.0” and occurs between people but also increasingly between people and their hyper-connected devices in a “limitless symbiotic relationship between human and machine” (Wheeler 2012). Our mobile devices are able to connect data, applications and people though cloud computing therefore as we learn from our devices so too do our devices learn from us. Web 3.0 enables a space in which the machine forms part of the meaning making process (Cronje 2016a).

According to Deleuze and Guattari (1987) the rhizome is a non-hierarchical system with the following characteristics:

- Connectivity: any point on the rhizome can be connected to any other.
- Heterogeneity: the rhizome is made up of diverse parts.
- Multiplicity: refers to the number of components that make up the system, when the multiple is effectively treated as “a substantive multiplicity” it ceases to have any relation to the “One”.
- A-signifying rupture: a rhizome may be broken, yet it will start to grow again at another point and form a new line.
- Cartography: the rhizome’s unbound ever-growing structure is best represented as a map that can spread outwards.
- Decalcomania: a rhizome is not governed by a structural or generative model (there is no pattern) and as such it is a "map and not a tracing".

The six properties of the rhizome as described by Deleuze and Guattari (1987) underpin Learning 3.0 in which endless connections between diverse learners are possible in open heterogeneous networks. The learner can access the network at any point and breakaway groups can be formed. The community of learners is thus self-organising and flexible. The learner navigates this network along self directed and individual pathways and learning occurs in the process without predicting the outcomes in advance (Mackness, Bell & Funes 2015, Cronje 2016 a).

21st Century Skills in Higher Education

Globally, academics are considering the curriculum and how to best respond to the fast paced changing needs of the 21st century. In design education, Vrontikis (2013) refers to designers as having to be entrepreneurs conversant with new models of funding such as crowd sourcing. Designers need to be resourceful, innovative, resilient and engaged in communities. In a world where the computer screen is considered too limiting, designers are expected to switch effortlessly between numerous mobile technologies using multimedia in non-linear ways. Students as well as professionals are becoming increasingly nomadic, selecting what is of use to them from particular courses or places of employment and then moving on to customise their particular skill sets.

In a technologically mediated context learning is no longer linked to a to specific text, place or time (Hedberg and Stevenson 2014). Students explore new ways of accessing and generating constantly changing content through multimodal forms of representation. If technology is viewed as a “mediator of pedagogy” it is possible to keep the curriculum current, and constantly evolving. Hedberg and Stevenson (2014) recommend incorporating “flexibility, experience, generativity, and openness” in the curriculum to ensure relevance into the new millennium.

Creating “Virtual Collaborative Learning environments” which engage students, encourage participation and a sense of ownership of the learning networks in open access platforms could be a way of responding to the challenges of preparing students to enter digitally mediated working environments (Quinton and Allen 2014). Quinton and Allen recommend using open access platforms rather than traditional learner management systems as they have identified that learner management systems can be restrictive and possibly result in “online versions of traditional instructional design”. Having to select suitable media and applications could also empower lecturers and students to engage more meaningfully and take ownership of the interactions.

Various authors list 21st century skills facilitated by using the Internet and digital applications, some of these are listed in the table included below and would need to be considered when designing the curriculum.

Designers as Peddlers	Designers are becoming entrepreneurs and need to be able to handle the entire process from concept, crowd source funding, prototyping and marketing.
Designers as Do-gooders	Designers are getting peer recognition through work in communities by mentoring and doing pro-bono work as apposed to entering design awards.
Designers as Swiss army knives	Designers need to have “media ambidexterity”, the computer screen is considered limiting and students now work across media in a non-linear way. “Toggling between media as required and unbound by fear of failure”.
Designers as Storytellers	In order to find more engaging ways of interacting with clients the narrative surrounding the designed artefact becomes important.
Designers as Nomads	Designers need agility to adapt to economical and environmental shifts. Students often attend three schools not necessarily finishing courses but taking the skills they need from different programmes. Designers embrace career mobility, taking what they need and then moving on, staff rarely staying longer than 3 years.

Table 1: Trends and skills requirements for designers (Vrontikis 2013).

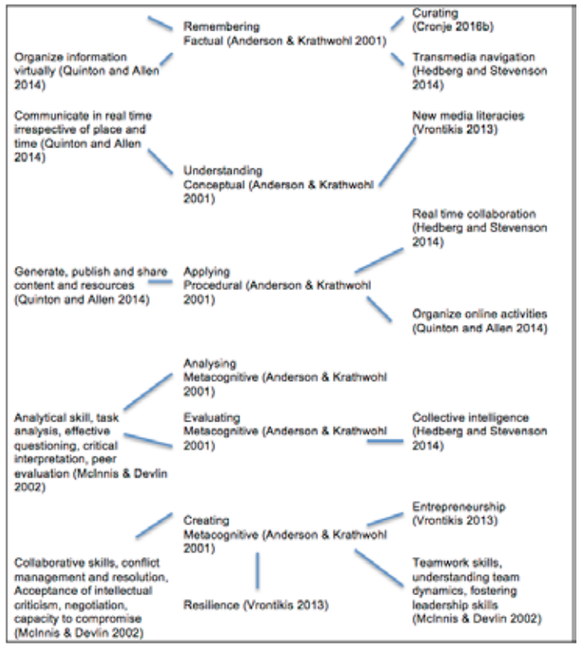


Table 2: 21st century skills and cognitive processes (Bower et al 2010).

As global economies shift towards alternative economic models, emphasis is also shifting from artifacts to strategies, services and systems. Design education in turn needs to respond to this in order to better equip students with the skills needed to navigate these environments, such as the ability to work as part of part of cross, multi and trans-disciplinary teams facilitated by networks (Green 2014, Brass and Mazzarella 2015). The implementation of a new design curriculum in universities in the United Kingdom in 2014 was characterised by:

- Emphasis on products that solve real problems.
- Considering the needs, wants and values of users in student’s tasks.
- The development of a broad range of subject knowledge, drawing on disciplines such as mathematics, science, engineering, computing and art.
- Teaching the ability to take calculated risks, becoming resourceful, innovative, enterprising and capable citizens.
- Gaining the skills needed to engage in an iterative process of designing and making, using techniques such as biomimicry and user-centred design to develop unique creative ideas (Green 2014).

The roles of the student and lecturer have thus also changed. In a world where there is limitless access to content, curatorship of this content is an important skill that should be taken into account in the 21st Century curriculum. Students are responsible to curate their own “personal learning environments” (Cronje 2016b) and are encouraged to be aware of their own thinking while lecturers need to monitor the student’s journeys, analyse the learning processes and provide feedback to the students and in so doing, facilitate the learning. The lecturer is therefore as active as the students (Quinton and Allen 2014) in a symbiotic relationship; Marshall (2014) likens this relationship with the Maori concept of ‘Ako’ meaning the “entwined synergistic experience of learning based on mutual respect and awareness of each others needs”. In our South African context this could also be described by the idea of “Ubuntu” which stems from African Philosophy and can be translated as “I am because you are”.

Conclusion

Leading on from the rhizome, the concept of the nomad is introduced by Deleuze and Guattari (1987) and is expanded on by Braidotti (2011). Nomadic theory embodies mobility of thought and is applicable to the constant change synonymous with the third millennium. In nomadic theory processes are more appropriate than concepts. Processes embody mobility and an affirmative transformative potential. The notion of “becoming” embodies this potential, and can be described as the path between points and represented by maps or cartographies (Deleuze and Guattari 1987). By mapping the 21st century graduate attributes from literature as catalysts for new flexible approaches to our design curricula alongside the expectations of professional bodies governing our architectural and interior design professions, we do not view these as being in opposition. We propose an open access, blended model of instruction that relies on a network of highly skilled lecturers, industry specialists, tutors and mentors to support students.

The challenges faced in our particular context with students coming from very diverse cultural backgrounds, often with very limited resources could be mitigated with rhyzomatic learning. As demands for free education increase, alternative economic models for tertiary education are required. If learning is not limited to text, place or time, students could be able to work to generate income in order to progress their education incrementally.

Rhyzomatic learning in open and unlimited networks offers opportunity for multiple multi-layered experiences, which embrace cultural diversity amongst students and lecturers emphasizing inclusivity and the democratisation of design education in South Africa. In a virtual space economic standing and cultural difference are less pronounced and the learning space could be seen as being a more democratic space where experimentation and creativity can be explored.

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Sockhorn

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ABSTRACT

'Sockhorn' is a simple device that helps the elderly put on their socks independently. It is a simple solution and has gone through a detailed open design process with the participation of older users.
Open Design is a method of collaborating with different participants during the design process. Since 2013, the Design for Social Innovation and Sustainability (DESIS) Lab of Hong Kong Design Institute (HKDI) has organised different workshops and forums on open design and has encouraged students to work with this new methodology. The Sockhorn is a result of these activities. It was designed by Cyril Lee, a Higher Diploma student in Product Design of the Department of Product and Interior Design at HKDI. Cyril created the concept with a group of design students and older individuals.
With the belief that 'design capability is a human capability', these design workshops had users and designers collaboratively work together to create better products.
During these design workshops, Cyril discussed with various older teammates to identify daily problems they face, many of which, through trivial, a young design student is not aware of. Problem after problem was explored and ideas were generated. The older teammates were involved in every detail, from research and development to prototype testing. As the workshop mentor, Dr Patricia Moore stated that 'Current designers design "for" people and not "with" people'. Inclusivity should not only describe design, but should also have a major role in the design process. The design 'with' people approach led to the birth of the 'sockhorn'.

keywords

elderly, empathy, collaborative design

INTRODUCTION

Open design is a design method of collaborating with different participants during the design process. Starting from 2013, DESIS Lab of the Hong Kong Design institute organized different workshop and conference on open design and encouraging their students working with this new methodology. Sockhorn was the result of this activities designed by Cyril Lee, a student from the Higher Diploma in Product Design, Department of Product and Interior Design, Hong Kong Design Institute (HKDI). He joined the design workshop "What the Health?" organized by the DESIS lab, HKDI. Cyril created the concept of "Sockhorn" with a group of design students and elderly. Mentored by Dr. Patricia Moor in the workshop, product design students were invited to prototype new medical equipment to be used in everyday life. Within the workshop, participants included design students, senior citizens, professional occupation therapists and staff members of Culture Homes (a NGO with senior citizens as staff). They all participated in the design jamming sessions to generate new ideas on design for future ageing populations [2]. The workshop was part of the "Open Design in Action" series in discussing the way to approach a complex design context such as design for healthcare, residential communities, politics, work, homelessness etc.

Open Design is closely related to how openness is approached in participatory design, which was introduced in the 1970s. Users and designers would collaboratively work together to create better products.

"Design capability is a human capability", stated by Professor Ezio Manzini in the Open Design Forum in HKDI. There are three very human gifts which everybody can do "1) to be critical, 2) to be creative and 3) to use our practical sense to understand" also stated by Manzini. Professor Fumikazu Masuda also stated in the some event "Everybody can design …… We do not need to be special to create something special" it is sure that there are valuable benefits if other stake holders involved in the design progress. In executing this design method, Lorraine Gamman, founder of the "Design Against Crime Research Centre" organized design studies involving all shake holders in the process. "Not just victims of crime, but all the actors involved – including criminals, the police, local authorities and everyone." [1]

During the open design workshop, Cyril discussed with various elderly teammates in seeking for daily problem they faced. There are very little tidely problems that the elderly face where a young design student will never aware of. Exploration of problems after

problems, ideas generated one after others. The elderly teammates involved in every details on research to development to prototype testing. As the workshop mentor Dr. Patricia Moore stated “Current Designers designed “For” people and not “with” people” 1, inclusive should not only describe design , but also take major role in the design process. The design “with” people approach led to the birth of “Sockhorn”.

Elderly often face the difficulty of putting on socks. Most of them suffer from arthritis, bending down in putting on socks is not an easy task. With “Sockhorn”, socks can be molded on one end of the device, user hold the handle on the other side without bending down. The 600mm long handle can be easily controlled and put on socks without any problem. “Sockhorn” was tested with different structure and material. With low cost and easy to use concern, it was finally made with folded plastic polypoperine sheet. This creative solution is a fruitful result of Open Design methodology which designer design “with people”.







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Five go to Mozambique

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ABSTRACT

Graphic design education in Higher Education may be considered to be vocational and focused on teaching a highly technical, particularly digital skill-based curriculum. In a highly competitive HE environment where there are many courses offering an industry focus and attractive employability prospects, graphic design pedagogy has to look for something different to deliver to students that will make them standout from the crowd. The aim of this project was to develop student intercultural competencies using critical approaches to global consumerism through a cultural learning experience in Africa, a continent where the inequalities of global capitalism are most acute. Using student interviews this film provides evidence of the student perspective and analyses how graphic design students participated and negotiated the implementation of local live projects.

A class of 3rd Year BDes Graphic Design students from Edinburgh Napier University were invited to work on two briefs for NGO projects in Mozambique, both aimed to socially, economically and culturally invigorate the community around Mossuril, a poor coastal town. In June 2014 five students were chosen by portfolio selection to travel to rural Mozambique to work alongside local students and in the process they developed shared working practices to create branding materials and publicity.

In a post-colonial context cultural naiveties can be challenged and an appreciation of the historical and economic impact of global consumerism can be engendered. Global citizenship can be fostered through live projects that offer highly motivated learning and sharing of ideas and practices with people from different cultures.

Keywords

intercultural competencies, graphic design, student mobility

Five go to Mozambique

A film of how design students develop intercultural competencies for professional practice and global citizenship.
(20mins duration)

INTRODUCTION

Graphic design education in Higher Education may be considered to be vocational and focused on teaching a highly technical, particularly digital skill-based curriculum. In a highly competitive HE environment where there are many courses offering an industry focus and attractive employability prospects, graphic design pedagogy has to look for something different to deliver to students that will make them standout from the crowd.

The aim of this project was to develop student intercultural competencies using critical approaches to global consumerism through a cultural learning experience in Africa, a continent where the inequalities of global capitalism are most acute. Using student interviews this film analyses how graphic design students participated and negotiated the implementation of local live projects in Mozambique.

In June 2014 five students from a UK university travelled to rural Mozambique to work alongside local students and in the process developed shared working practices to create branding materials and publicity for local NGO projects run by Breaking the Ice and the Teran Foundation. We were invited to work on two briefs, both aimed to socially, economically and culturally invigorate the community around Mossuril, a poor coastal town in northern Mozambique. One was to design soap packaging and publicity material for a women’s co-operative called SHINE, and their other supporting initiative, a new annual film festival called LIFE.

Context

Within the field of graphic design many contemporary designers and educators seek to challenge global corporate homogenization and the exploitation of developing countries (Rawsthorn 2013; Poynor 1999; McCoy 1994). The ‘First Things First 2000’ manifesto re-booted the Humanist and socially conscious perspective that was originally set out by Ken Garland’s ‘First Things First’ manifesto (1964), arguing that Design was not a neutral process, but one that should be more critical and challenging of consumerism. Mendoza and Matyók (2013) argue within the field of education

that design is a transformative and social engaged practice offering an important platform for student internationalisation. Although there is a growing body of academic literature on the internationalisation of higher education, there is still a lack of research on the students' perspective (Brooks and Waters 2011).

Methodology

Using the leverage of the University's strategic plan to encourage student mobility, employability and an enhancing learning experience, the course leader made applications for School and Faculty financial support. Applications were invited from a class of 3rd Year BDes Graphic Design students for four available funded places. The students were then selected on the strength of their work and their personal statements. The project was set as a credit-bearing module, formalising it into their assessed programme of study. In preparation for the cultural and environmental differences students were introduced to life in Mozambique through a seminar from a Mozambican academic, a video link conversation with Lisa de Teran (who runs the Teran Foundation from her home in Mossuril) and by reading her book, Mozambique Mysteries (2007). The film was made within a documentary tradition recording the design process in the field, and with in-depth interviews following a structured questionnaire immediately before the students' departure from the UK, and a week after their return from Mozambique. During their time abroad the students kept reflective learning logs, and all were encouraged to post on the project's online blog.



Figure 1. UK and Mozambique students working on mural.

Critical Approaches to Global Consumerism

In the context of their studies they were looking forward to 're-evaluating what design could be', working with craft materials and witnessing the impact of their work in action in the community (see figure 1). Their learning would be given a new dimension, perspective and way of looking at materials and communication where digital technology and first world resources were less easily accessed. A degree of economic poverty was expected, if only informed by Western media, but none (lecturers included) were prepared for the far more complex overlap of technologies, cultures, commercial and political relationships that Mozambique shares with the outside world.

Returning from Mozambique there was a lot to absorb and reflect on: 'I'm still processing it, there's a lot going on in my mind' (Student E). Possessions and the value of family were re-evaluated. The students' awareness of their material wealth problematically juxtaposes their superiority when compared to the Mozambicans (Raymond and Hall 2008). Previous studies of volunteer tourism have found that their 'act of giving relieves (the) guilt of being in a superior position, but does not in any way change the system of privileges available to (volunteer) and not available to the aid-recipients' (Sin 2009: 495). In order to counter such dichotomies, a deeper cultural understanding of the host aid-recipient is essential. This project fostered collaboration and an exchange of skills and knowledge; it had recipients on both sides. At the same time the UK students were witness to the social reality of economic inequality and hardship, particularly amongst younger children (see figure 2). An invaluable political and social historical context was provided by the participation of Lisa de Teran (2007), which was essential in cementing the value of the intercultural experience for all the students, UK and Mozambican.

Conclusion

The film contributes to a widely used practice of using documentary video to record and evaluate research projects in pedagogic and other fields. For academics in design practice and design pedagogy the film illustrates several wider contextual issues.

We presented new paradigms of design that could respond to the rapidly changing world, although as we found also a world that retained old traditions and cultures. While the focus of this study was on graphic design students there are lessons that can be extrapolated to other design subjects and beyond. Indeed, students from other European countries would gain similar intercultural competencies not only in the African continent, but Asia and other post-colonial regions of the world.

This film shows that design education can develop intercultural competencies through creative practice that engages live briefs for international charities and organisations working in the third sector. In a post-colonial context cultural naiveties can be challenged and an appreciation of the historical and economic impact of global consumerism can be engendered. Global citizenship can be fostered through live projects that offer highly motivated learning and sharing of ideas and practices with people from different cultures.



Figure 2. Girl with water can waiting for dhow.

Video

https://vimeo.com/133320372

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Down Memory Lane

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ABSTRACT

Research informed teaching is very much at the core of the MA Design Programme at Sheffield Hallam University. Students are in the first instance able to learn about research findings specific to their subject area (research led teaching). Students learn about research methodologies and processes (research orientated) and finally students are offered the opportunity to engage in real-world research projects. This is illustrated in a first semester module that uses the theme of Socially Active Design. The overall strategy focused upon enabling students to participate in socially responsive design practice with a particular focus on developing collaborative interdisciplinary student-generated responses to working in partnership with people with dementia and the UK open knowledge sharing platform organization 'Fixperts' (www.fixperts.org).

The inter-disciplinary make-up of the teaching team, drawing on expertise from health and research (engaging with staff from the interdisciplinary research cluster Lab4Living) as well as design meant that students could be signposted to key resources. Initial sessions offered students the opportunity to hear from specialists in dementia care and on-going contacts were made contact with a large third sector organization in the form of Alzheimer Society. In this way students were supported in understanding ways of accessing communities and how to develop projects, avoiding Katie Swenson's (2012) concern regarding some curricula, which fail to 'teach students about how projects actually happen'. It also meant that support could be offered in relation to navigating and coping with the emotional complexities that working with people living with long-term conditions such as dementia could evoke.

Keywords
Dementia, inter-disciplinary, socially-active

'It is the changing world that shapes where we are going therefore our graduates need to be changing. We are moving, in transit but the curriculum isn't. Design can be disruptive'. Bateman and Craig (2016)

A wide range of factors such as business, politics, societal needs and requirements and technological innovation influences the professional practice of design. As these factors are continually shifting and changing design is constantly undergoing transformational changes. Additional factors such as the aging population, climate change, increases in migration and the world population means that the sheer scale and scope of the changes the world, and it's population now face are immense. How can designers respond to these challenges? Do designers need to work in different ways, challenge the role design plays in the future and engage with the 'big world issues'? To be able to work within such a complex future how does design education need to innovate if it is to discover and develop new relevance in a changing world?

According to Armstrong et al (2014) whilst designers are operating in an expanding field and claim to 'have the potential to address these [wider] issues, the question still remains as to whether they are adequately equipped to deal with them (Nussbaum et al 2010, Kiem 2013, Miller 2013). Change is often facilitated through education and if it is change in the curricula in HE that holds one of the keys to equipping designers to address the wider issues facing humanity and the planet, we suggest that it is beholden on teachers, lecturers and Universities to ensure that social innovation and sustainability are embedded into courses at all levels.

Research informed teaching is very much at the core of the MA Design Programme at Sheffield Hallam University. Students are in the first instance able to learn about research findings specific to their subject area (research led teaching). Students learn about research methodologies and processes (research orientated) and finally students are offered the opportunity to engage in real-world research projects. This is illustrated in a first semester module that uses the theme of Socially Active Design. The overall strategy focused upon enabling students to participate in socially responsive design practice with a particular focus on developing collaborative interdisciplinary student-generated responses to working in partnership with people with dementia and the UK open knowledge sharing platform organization 'Fixperts' (www.fixperts.org).

Building on our reputation for design innovation in health and social care, Sheffield TeachingHospitals approached us to set their own design challenge. Claire Jepson, senior occupationaltherapist at the trust, set a group of our postgraduate students the task of developing a product that would help people with dementia to retain memories and navigate technology. The postgraduate students applied their design knowledge and created innovative solutions to the unmet needs of dementia patients, with the potential to deliver real benefit to the patients. Two students – Josephine Gomersall and Paddy Beirne – shared their idea of an interactive memory cabinet for people experiencing memory loss and were selected to develop a more detailed proposal. The memory cabinet was conceived to meet the needs of people living in hospital or care, away from home. The cabinet connects personal memories with display devices, offering an interactive and responsive way to help users remember what home means. The students have since shared their ideas in a number of settings within the trust and have gone on to present their work at industry conferences.

'I am thrilled that all Sheffield Hallam students are now receiving some education on dementiaand how it impacts our society. Thanks to the two students who went on to develop their ideas by designing an interactive Memory Cabinet for people living in 24-hour care. This design proposal was recently presented to a group of occupational therapy colleagues who found it very inspiring.' Claire Jepson, senior occupational therapist, Sheffield Hospital Trust.

'I've learned what an important role empathy plays in the design process. How to design through emotion and a human connection, how to walk in another person's shoes and identify their problems and solve those problems in a way that suits that person.' Paddy Beirne, MA Design student

The inter-disciplinary make-up of the teaching team, drawing on expertise from health and research (engaging with staff from the interdisciplinary research cluster Lab4Living) as well as design meant that students could be signposted to key resources. Initial sessions offered students the opportunity to hear from specialists in dementia care and on-going contacts were made contact with a large third sector organization in the form of Alzheimer Society. In this way students were supported in understanding ways of accessing communities and how to develop projects, avoiding Katie Swenson's (2012) concern regarding some curricula, which fail to 'teach students about how projects actually happen'. It also meant that support could be offered in relation to navigating and coping with the emotional complexities that working with people living with long-term conditions such as dementia could evoke.

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Creating an ‘Open’ and ‘responsive’ Design Curriculum

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ABSTRACT

The ‘Open Design Education track’ presents a volatile societal context in which designers apply thinking skills on ever more complex areas, producing strategic and systemic outcomes far beyond the original product design competencies they were trained in. As educators, we need to ask how we can prepare design students to apply and extend their traditional competencies to larger problem sets and how we prepare students for a future that is mostly unknown at the time of teaching? How do we create an ‘open’ curriculum of design, one that is able to adapt to these new applications of design, one that is responsive to change?

In this workshop, we aim to share the insights gained from applying principles of Design Thinking to curriculum design practices and to initiate a discussion on how it may be possible to overcome some of the constraints of the academic institutional fabric that complicate rapid adaption to a changing society and a similar evolving role of the designer through the use of an integrated, outcomes-focused curriculum co-design approach.

We will guide participants through a series of hands -on exercises and will provide ‘visual thinking’ and ‘hands on thinking’ experiences that will help faculty teams to define and detail dynamic, open curriculum in a playful, energizing way. We will provide participants with a ‘Design Thinking’ toolkit to collaboratively visualize and build a dynamic ‘learning outcomes driven curriculum map’.

Keywords

Curriculum design, design competencies, co-creation

Project Description

How do we create an ‘open’ curriculum of design that is responsive to change? In this three-hour workshop, we will guide design education leaders and researchers through a series of ‘visual thinking’ and ‘hands on thinking’ exercises that will help them to define and detail dynamic, open design curriculum in a playful, energizing way.

Rationale

The ‘Open Design Education track’ presents a volatile societal context in which designers apply thinking skills on ever more complex areas, producing strategic and systemic outcomes far beyond the original product design competencies they were trained in. As educators, we need to ask how we can prepare design students to apply and extend their traditional competencies to larger problem sets and how we prepare students for a future that is mostly unknown at the time of teaching? How do we create an ‘open’ curriculum of design, one that is able to adapt to these new applications of design, one that is responsive to change?

In addition to the challenges of creating a future oriented curriculum, if you have ever wandered into a curriculum redesign process, you will know that the goal of creating a program curriculum is a ‘wicked problem’. And one that is difficult to solve because curriculum is a contested and emergent thing with complex interdependencies influenced in both radical and subtle ways by numerous actors. There are, however, some insights to be gained from Design Thinking and current practices in curriculum development that can help curriculum development teams to lessen the frustrations of making sense of existing design curriculum and working toward a shared vision for the future of an ‘open’ design program.

Process

In this workshop, we aim to share the insights gained from applying principles of Design Thinking to curriculum design practices and to initiate a discussion on how it may be possible to overcome some of the constraints of the academic institutional fabric that complicate rapid adaption to a changing society and a similar evolving role of the designer through the use of an integrated, outcomes-focused curriculum co-design approach.

We will guide participants through a series of hands -on exercises and will provide ‘visual thinking’ and ‘hands on thinking’ experiences that will help faculty teams to define and detail dynamic, open curriculum in a playful, energizing way. We will provide participants with a ‘Design Thinking’ toolkit to collaboratively visualize and build a dynamic ‘learning outcomes driven curriculum map’. The engagement of design program students, colleague teachers and alumni in curriculum co-design is vital. The workshop builds on research of ‘decoding’ the traditional studio practice, using (Bloom’s) cognitive, affective and psycho-motor domain as a multi dimensional knowledge platform to define measurable learning objectives.

Outcomes

At the conclusion of the workshop, we expect participants to have become familiar with the Open Curriculum Design Thinking tools and have created one or two experience prototypes, using their own programs as starting point. Furthermore, to provide this ‘open’ or ‘dynamic’ curricula with a front end process of identifying future design application areas, we expect participants to be able to use presented curricular co-design capabilities to engage with students, alumni and colleagues. Long term, we hope to establish a community of learners (current students, alumni, industry) through which the rapidly unfolding design futures are being identified, negotiated and integrated in an organic, responsive curriculum.

Workshop Logistics & Background Information

Expected number of participants and target audience
This workshop is targeted at design education leaders (chairs, deans), design faculty and (design) education researchers. The workshop aims to provide this audience with a new approach to curriculum design and tools to apply within their own educational setting. The workshop will also provide policy makers and administrators insight into defining and measuring program quality and didactic effectiveness. In this workshop, participants will be collaborating in small groups (5 to six people). The workshop may accommodate 25 up to 30 participants in total.

Duration

Ideally, the workshop would take part over four hours, but if needed the workshop can be reduced to three hours, within the presented time slot of 2pm to 5pm.

Preferred venue and equipment required

A large room that accommodates up to 30 people working in groups of 5 around round tables (up to six) with at each table a flip board and markers. The room should have a presentation screen, a data projector and not to noisy (carpet) and/or have a small series of break out rooms attached (to spread the groups).

Short biography

Job Rutgers (Netherlands, 1967) is a full professor in Design at OCAD University in Toronto, the largest university of art & design in Canada. At OCADU, he recently co-designed the Industrial Design Curriculum (BA) and the Design for Health curriculum (MA). At OCADU's digital futures initiative, job is the principal investigator of the Ambient Experience Lab.

In addition to his role at OCADU, Job is also teaching ‘Leadership in Systems Change’ at MaRS, one of the world's largest urban innovation hubs, in Toronto. He is also a design strategist at VUKA Innovation, working on systemic healthcare challenges.

He was a fellow at Rotman Business School’s Integrative Thinking Institute and design strategy consultant at Rotman’s Designworks. He has worked extensively with Singapore Polytechnic, training faculty in curricular design and the creation of innovative learning spaces.

Prior to receiving tenure at OCADU, Job has long been associated with Philips Design in the Netherlands as a Strategic Design Consultant. At Philips Design, he was the creative director for several multi-disciplinary research projects funded by the European Union. He co-developed the award-winning Ambient Experience Design service and has implemented ambient experience concepts in hospitals, the hospitality industry and public spaces around the world.

Job brings deep skill in designing educational environments and cares deeply about dwelling in spaces of not-knowing, and listening and leading from a place of presence.

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The education flâneur – a global studio, 2 cities, 5 years, 200 students and communities of practice

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ABSTRACT

What does it mean to be a global designer of tomorrow? The framework of design education has to respond to the changes in the landscape. The characteristics layered by sequential, experiential and iterative learning, and pedagogical knowledge and understanding are not acquired passively but in an active manner through personal experience and experiential activities; and that learning is based on problem-solving and an exploration of a particular line of inquiry and an active engagement with ideas.

As part of studying the development of design education, the Linking Cities, Designing Experiences project underpins a critical inquiry into the issues of urbanism and urbanity. The city encapsulates engaging multifaceted insights and intriguing phenomenon. Students from Singapore and Seoul share different ideas on themes and subjects based on the 'city'. This project includes ideas of the urban typology, the urban environment, the social settings of cities and their physical infrastructures. The information sharing and collaborative ethnographic research underpinned the critical discourse, as the students are inhabitants of two different cities. The research puts forward an 'Open Design' concept in learning and teaching design through a cross-cultural design experience in the urban. Ideas related to iterative participatory design, cross-disciplinary design practice, experimental place-making and 'reflection-in-action' (Schön,1983) formed the important pillars to this project. Designers alike meet to deliberate, collaborate and forge new relationships and exchange ideas with cross-cultural references and insights. This research proposes methods and approaches that could manifest in promoting pedagogical discourse for the future.

keywords

converging, cross-disciplinary, experiential learning

INTRODUCTION – Cross-disciplinary Studio and Cross-cultural Experience

Design is an important tool for social progress. In facilitating a global outlook, the move towards the integration of design thinking within the context of society, economics, technology and culture will become critical in the way we shape everyday life. As such, the integration of design thinking and research poses interesting and challenging propositions. As part of studying the development of design education, the Linking Cities, Designing Experiences project underpins a critical inquiry into the issues of urbanism and urbanity. The city encapsulates engaging multifaceted insights and intriguing phenomenon. This project proposes methods and approaches that could manifest in promoting pedagogical discourse for the future. Students from Singapore and Seoul share different ideas on themes and subjects based on the 'city'. Ideas of the urban typology, the urban environment, the social settings of cities and the infrastructures were presented in debates and students discussed ideas collaboratively. The information sharing and collaborative ethnographic research underpinned the critical discourse, as the students are inhabitants of two different cities. Being urban dwellers themselves provide an interesting and novel perspective on their thinking and critical reflection on the urban environment. Allowing such participative engagement with current and emerging themes, push the design thinking and encourage the students to ask relevant questions and build their hypotheses. Developing concepts based on city narratives provided interesting insights and interpretations. Studying the city both in its physical form as well as the social and cultural vocabulary provided a specific underlying inquiry and formulated interesting insights and case studies.

Buchanan (1999) highlighted the role of design research as a significant, most sophisticated and well-grounded form of investigating Design and its vital role in the 21st century in preparing researchers and educators who will expand that knowledge through original inquiry, which is fundamental to any learning of design. Design is about meaning-making, and this project elevates the research scope to another level. There are many different interpretations and having a real-based engagement with the situation enhances the study.

Case study - the Linking Cities, Designing Experiences Project

The Linking Cities, Designing Experiences Project has been running for five consecutive years since 2011 with participants from Sangmyung University, South Korea and LASALLE College of the Arts, Singapore. The project aimed to develop the design responses to themes uncovering the intricacies of the city; its social form and their relations to its inhabitants and even its polyphonic history using site visits and etymological research and visual culture. The project's objectives were to develop students' research skills to understand cultural and contemporary design, fashion and visual arts in an urbanisation context. Students were required to demonstrate research skills to make well-informed presentations with critical analysis on creating contemporary design proposals and outcomes.

The project posed multi-disciplinary investigations on the city captured by different people, different cultures and different socio-economic backgrounds. The rise of the city affects today's generation of city dwellers and by 2050, the population is projected to increase to 75%. What meanings and manifestations will be questioned and will they be answered in new narratives? Research-based Design has become central to contemporary design approaches and provides insightful opportunities, information and new knowledge to design practitioners. Jacobs (1993) approached cities as living beings and ecosystems. She had suggested, that over time, buildings, streets and neighborhoods function as dynamic organisms, changing and evolving in response to how people interact with them. She explained how each element of a city – sidewalks, parks, neighborhoods, government, economy – functions together synergistically, building a natural ecosystem. This understanding helps us discern how cities work, how they break down, and how they could be better structured (Hollis, 2013). These form significant research interests and presents new layers to varied interpretations. It propelled an ongoing dialogue between the physical space and the inhabitants. The manifestations and evolution of culture and sociological wonder will portray interesting insights and narratives while other narratives are drawn every day.

The Linking Cities, Designing Experiences Project was conducted from 2011 – 2016 with different themes each year and with two separate parts to each year's project. The first part designed as a workshop is used to deliver the brief to students and explore ethnographic research either in Singapore or Seoul. Project facilitators and mentors led different discussion groups, and students were then tasked to conduct fieldwork research and document evidence either through photography or videography. The materials and findings collated were then discussed and presented to other groups, followed by a provision of further input and feedback. The core aspect of this process was the idea of collaboration and participation. The project then was followed by a second part, which was the travel to either city. For instance, in 2016, the workshop was conducted in Seoul and after three months, South Korean counterparts traveled to Singapore for a follow-up workshop and exhibition. The design outcomes by the students were a result of deliberation, collaboration and collective design production over three days and these works were curated in an exhibition and then opened to the public in a gallery space at LASALLE College of the Arts in June 2016. This model for the project was carried through over the five-year period with approximately 15 students each year although the numbers quintupled to 75 in the year 2016.

Urban planners and architects plan and design cities, its infrastructure and spaces. These have various effects on our physiology, psychology, and sociology. This relationship between man and city has often been one-sided; where urban planners do not include the ideas of urban communities. The Linking Cities project proposes a focus on how urban dwellers can shape their social environment within the spatial trajectories. How does the city shape urban dwellers and how can urban dwellers be involved in the shaping of their cities? How does public space affect mood, emotion, interaction and living habits? What kind of effects does it have on social and cultural activities? (Gehl, 2012).

The main inspiration for this project was underpinned further by a quote by Koolhaas (1995) that "outlined cities as an imperfect collage: all foreground and no background". This statement pushed the boundaries to the project and aimed to inquire on the background traits and intricacies of the city. Issues on urban conditions surround city life. The city encapsulates a wondering pot of interesting insights intricately linked to the economy, politics, the social and cultural phenomenon of urbanism. The rise of the city affects this generation of city dwellers and influences the way the next generation will live.

The project hopes to become a vehicle to re-focus, and conversely re-define the urban space by exploring the vision, participation and the potential of the lived environment. Different responses of the student designers' observations of urbanism and the inner layers of urbanity were presented. The inquiry advocated different ways of seeing through the various views of different design disciplines, to allow possible interpretations and reflections between the urban space and the systems of cultural behaviors. The project established conceptual approaches and interest in urban design by looking through the lens of the living systems and studied the space and micro-interactions between different designers, to create meaningful design ideas.

The five themes for the project revolving around the subject of the city were; 'Quiet-scapes', 'Visualising the Value of the City', 'Traces of the City', 'Social Rhetoric of the City' and the recent one, 'The Flâneur'. Each theme focused on specific research questions and identified with ideas of the physical environment of cities, the social infrastructures, the historical remnants and memories of a city and the ideas of mobility, experience and urban travel. These themes were selected based on readings and brought interesting discussion points and new perspectives from the participants. Students were required to demonstrate research skills to make a well-informed presentation with critical analysis on creating contemporary design proposals and outcomes. Students took into account appropriate methods of academic inquiry and were able to:

- Demonstrate reflective knowledge and understanding of contemporary design theories, issues, principles, and concepts relevant to the subject and theme
- Demonstrate a critical and reflective knowledge and understanding of visual culture and society.

- Find, critically evaluate and interpret evidence from relevant literature and material culture.
- Communicate information, arguments and ideas effectively and appropriately to the subject, purpose and audience, in both written and verbal forms.

Students were also exposed to different modes of learning and understand how to work in multidisciplinary teams and communicate effectively internally between team members, and externally with the wider community. This was a challenge at the beginning of each year's project as the students sometimes struggle with language barriers and have problems communicating with one another. However, as designers, they had to problem solve using different means of communication and have to work dynamically as a team. Members of each team took on various roles during the process of the whole project. Collaboration is key to the entire project. Design is an activity that requires teamwork and collaboration. The design process is often a negotiation between one person and a group to another. This process involves the sharing of ideas, knowledge and skills, an avenue to understanding teamwork and overcome challenges through learning. Working in a team is important in the creative industry and is fundamental to the core of experiential learning. The focus of learning is best shaped through experience and the participants had to be practically involved in different ways.

The approach outlined a framework for critical and reflective thinking, fostered problem-solving skills and enhanced an active engagement with different issues, challenges and the importance of the role of designers especially in collaborating with diverse communities.

Experiential Learning

Field-based learning is the oldest and most established form of experiential learning, which was integrated into higher education in the 1930s (Lewis & Williams, 1994). The emphasis of experiential learning is to validate and test concrete experience. The personal experience relates to subjective personal experience and interpretations to the design brief. The action-research, fieldwork and observation analysis formed the third stage to the learning model and then the final stage focused on the design-making and putting into practice the thinking, feeling, perceiving and behaving, conceptualised into interesting design proposals.

Through the lens of Kolbs (1984), the meaning-making process of the individual's direct experience is an important notion to experiential learning. However, the gaining of knowledge is an inherent process that occurs naturally, a genuine learning experience, which requires certain elements. The values of which, focused on learners involved in the full experience, the ability to reflect on the experience and contextualising the experience using different methods as well as to translate new ideas and new insights gained from the experience. The diagram below highlights the process that was applied in the Linking Cities project.

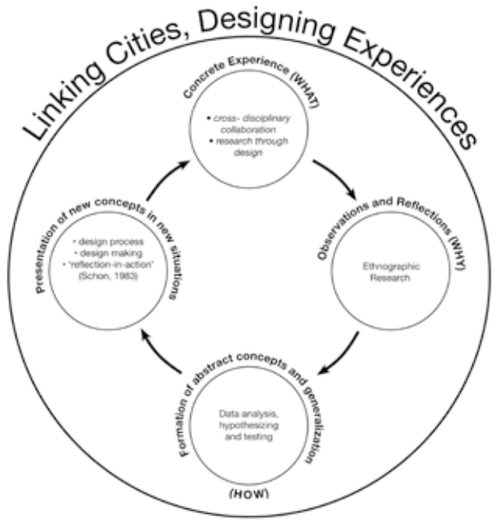


Figure 1 - Full cycle and different stages to the Linking Cities, Designing Experiences project (adapted from Kolbs (1984)

From evaluating the whole process of the entire project, some findings were made for future analysis.

Findings and Insights:

Strengths of the project include:

- A cross-cultural experience and this fosters collaboration with students and the wider community while converging different design practices
- An invaluable experience of exchange with participants from different background and different disciplines
- An opportunity to test theory into practice – real-world experiences that form an important aspect of transferable skills for future careers
- A reflective learning experience that builds a meaningful discourse
- A disruptive learning – breaking down siloed design practices

Weaknesses of the project include:

- Language and cultural barriers - participants come with different backgrounds and may sometimes have different perceptions
- The environment could pose unpredictable challenges for participants, and sometimes the project outcomes cannot be determined in a short amount of time
- Time and distance may constitute a factor in developing a successful inquiry as participants come from different institutions and have different academic background and priorities
- Research gaps – insufficient investigation and in-depth critical analysis

Methodology – Communities of Practice

The Linking Cities project focuses on experiential learning and using social practices as a platform to contextualise theory into practice. Wenger (1998) defined communities of practice as a form of collaborative learning created by a group of people with similar intent. In this case, the studio comprised of groups of different designers of various disciplines engaged in a joint research-based practice. The participants in this project come from art and design disciplines such as Graphic Design, Ceramics Design, Fashion, Interior Design, Architecture, Product and Industrial Design. Students whom participated in this project over the five-year period, have different ethnic and cultural background with varying demographics. The exchange and collaboration formed a critical part the design process and facilitated interesting and exciting possibilities related to academic research and scholarship.

Many exchanges take place in the studio, which has been identified by Schön (1983) as a particular culture, a model of teaching and a site for research. For many, the idea of the studio is much more about location, a home base, and a familiar territory. This platform is important, as the very act of learning to engage with ambiguity and the unknown requires courage and a safe place from which to venture forth into unknown territory. However, in this project, the 'studio' did not conform to a physical site and different settings were experimented. From the actual classroom to a gallery space and the real urban travel provided multi-dimensional possibilities and opportunities.

The idea of a traveling open studio concept where designers alike could meet to deliberate and collaborate on a project facilitated a different cross-cultural learning experience. Participants forged new relationships and exchanged ideas underpinned by varied cultural references and insights. In the Linking Cities project, participants used the city as their field research study and also their live studio, fostering a different level of discussion and proposed an exciting design ritual of some sort. The research fieldwork ranged from case studies, action research, comparative analysis and observation analysis. The outcomes were presented in a public exhibition to allow for interaction between the designer/producer and the audience. Further analyses were then deliberated as a post-analysis.

The Workshop – The City: A Social Experiment

The Linking Cities project seeks to continue to put forward an 'Open Design' concept in learning and teaching design through a cross-cultural design experience in the urban. A workshop designed to facilitate a discussion and allow participants to collaborate on the research inquiry. This workshop will examine the new paradigm of learning beyond a traditional classroom learning system that will develop dynamic pedagogical approaches, push boundaries and formulate on-going cross-cultural dialogues.

Education must become a catalyst to encourage the fertilization of new ideas. Collaboration and negotiations are integral in the design process. To foster some of these principles, the initiation and development of cross-cultural and cross-disciplinary projects will amplify this thinking approach and promote a conscientious learning aptitude for future designers. It is crucial for designers to acknowledge the changes of the everyday and contemplate the future. The present day poses different challenges, which could bring new knowledge, hypotheses and speculations for the future. The design world has already changed. The relationship between humans, designed objects and the environment are faced with several challenges. This society should benefit from the way great designers think. Designers of today and tomorrow must engage in creative problem solving that focuses on the immediate human social needs. The human interface is vital to the design process.

Conclusion and Future Research – A New Paradigm for Learning

Berger (2019) stressed the importance of asking fundamental questions, questions that have yet to be asked. Designers are urged to work above and beyond constraints and think intuitively to respond to challenges ahead. These are learning instruments that designers must use to apply in their design process. Non-designers can learn a thing or two from this. What makes us better designers than others? Who will reconsider this world around you? Future research and design projects include extending the Linking Cities, Designing Experiences project to more than one design institution and propose to focus on the Asian perspective. At the point of writing this paper, there have been interests from higher education institutions including from The Philippines, Indonesia and Thailand.

Ideas of Open Design put forward a proposition for more collaborative and co-creation work to happen between designers and non-designers. How can these inquiries shape the way we think and work in the future? The global designers of tomorrow must be nimble, creative and be inquisitive to solve problems and to respond to emerging design issues, dig below the surface for interesting questions and their probable answers. The ambition of this project is to expand globally and for the research to grow, presenting further discourses and a new paradigm for learning design using the city as a subject.

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Inspiring open designers of the future

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ABSTRACT

Designers are increasingly involved in tackling complex, wicked problems that arise from complex societal challenges. Such involvement results in rapid change in design practice as it enters and expands into new territories, highlighting the importance of rethinking design education to better prepare future designers.

This workshop aims to consider ways in which we can equip designers with the necessary skills to engage members of the public in co-creation and participatory design, drawing upon the international and multidisciplinary perspectives afforded through the conference.

Using the approach of Experience Labs, this session aims to engage delegates to share their practice, experiences and insights from their respective disciplines, towards preparing future designers. Experience Labs employ a design-led participatory approach to innovation within the health and care context. To date, the Labs have developed and evolved as a way to provide a space for creative collaboration. However, the Lab approach has been recently applied within the context of design education to foster interdisciplinary collaboration within Art and Design disciplines.

Delegates attending the workshop will be asked to form groups around four design education challenges: (1) Engagement, (2) Sustainability and Impact, (3) Empathy through design, and (4) Ethics by design.

The workshop will produce insights for the themes addressed and will provide the opportunity to gain an international perspective on these challenges within design education. It is anticipated that the workshop could also generate a network/community of interest for design education specifically related to the themes addressed throughout the workshop.

keywords

design education, creative collaboration, participatory design

Project Description

The workshop aims to consider ways in which we can equip future designers with the necessary skills to engage members of the public in co-creation and participatory design, drawing upon international and multidisciplinary perspectives afforded through the conference. It aims to engage delegates through a designed workshop session to share their practice, experiences and insights from their respective disciplines, towards preparing future designers.

The workshop session will begin with the authors sharing an example of the way in which they are prototyping their participatory design approach with students in order to develop research and teaching linkages within the Institute of Design Innovation, Glasgow School of Art. The Lab team will share the findings from the first iteration of this event, including findings from pre- and post interviews with student participants from a range of Design and Art disciplines in order to define and contextualise the approach.

Delegates attending the workshop will be asked to form groups around four design education challenges: (1) Engagement, (2) Sustainability and Impact, (3) Empathy through design, and (4) Ethics by design.

1. Engagement: this challenge focuses on how we educate and prepare designers to engage with a range of stakeholders in co-creation and participatory design.

2. Sustainability and impact: this challenge relates to how we educate and prepare designers to consider and design for sustainability and impact.

3. Empathy through design: this challenge relates to how we educate and prepare designers so that they can design both ‘with’ empathy and ‘for’ empathy when engaging participants in co-creation and participatory design.

4. Ethics by design: this challenge relates to how we educate and prepare designers to consider the ethical dimensions of their work in increasingly complex research landscapes, particularly when ethics is often viewed as a barrier or alien concept rather than a valuable part of the design process.

Employing design practices from the Experience Labs, each group will then be guided through an exercise using a designed tool to consider ways in which to educate and prepare designers to tackle the complex societal challenges of the future. Design researchers will facilitate each group’s work, and delegates will be encouraged to share experiences and insights from their own practices and disciplines in relation to the four challenges.

As an output of this activity each group will be asked to identify key learning outcomes and develop a design brief for students that would support experiential learning activities relevant to this theme. Groups will then summarise and share key insights in response to the theme with the wider group.

The workshop will produce insights for each of the themes addressed and will provide the opportunity to gain an international perspective on these challenges within design education. The outcomes of the workshop and insights captured will be analysed and used to develop a paper to share the findings of the workshop with the design community. In addition, the workshop aims to generate a network/community of interest for design education specifically related to the themes addressed or identified in the workshop.

Abstract and Rationale

Designers are increasingly involved in tackling complex, wicked problems that arise from complex societal challenges. Such involvement results in rapid change in design practice as it enters and expands into new territories, highlighting the importance of rethinking design education to better prepare future designers. Design has been described as an ‘integrative discipline’, capturing this multi-layered expansion, and suggesting that design is entering an all-inclusive paradigm to tackle complex challenges (Moreira, Murphy and McAra-McWilliam, 2016). In addition, design is referred to as a ‘transformative discipline’, encompassing a (social) strategic focus through a socially-engaged practice increasingly concerned with shaping futures (ibid, 2016).

The rapid growth and expansion of design practice highlights the importance of rethinking design education in preparing future designers. The role of the designer is also changing from the ‘top down’ creative to the ‘humble’ designer (Slavin, 2016) and there is an increasing need not only to be able to creatively engage a range of stakeholders in co-creation and participatory design practice, but to be able to engage empathically and develop interpersonal skills required for creative collaboration and engagement.

Experience Labs employ a design-led participatory approach to innovation within the health and care context. To date, the Labs have developed and evolved as a way to provide a space for creative collaboration, however, the Lab approach has been recently applied within the context of design education as a way to foster interdisciplinary collaboration within Art and Design disciplines. The Labs can offer ways in which to cultivate the future designer through both providing ways in which to prepare designers to engage a range of stakeholders in co-creation and participatory design, and equipping designers with the interpersonal skills required for creative collaboration. In the context of design education, they can offer students a rich experience and the opportunity to consider different ways of engaging stakeholders throughout the design process.

This workshop aims to consider ways in which we can equip designers with the necessary skills to engage members of the public in co-creation and participatory design and to consider the ethical dimension of their work, drawing upon the international and multi-disciplinary perspectives afforded through the conference. Using the approach of Experience Labs, this session aims to engage delegates to share their practice, experiences and insights from their respective disciplines, towards preparing future designers.

Expected Number of Participants and Target Audience

The workshop is intended to be relevant to all conference attendees, and would benefit from a mix of attendees representing: academics and educators; professional design practitioners and collaborators; and design students. The workshop could accommodate up to 40 participants.

Short Biography of Organisers

Tara French is a Research Fellow at the Institute of Design Innovation, Glasgow School of Art with expertise in designing creative research approaches for experiential learning and embodiment of new interventions for person-centred care. She has a wealth of experience and knowledge in creative collaborations within the health and wellbeing sector. Her research interests lie within the theme of eudaimonic wellbeing towards engaging people to recognise assets that contribute to positive human flourishing.

Gemma Teal is a Research Fellow at the Institute of Design Innovation, Glasgow School of Art specialising in participatory design approaches to innovate in health and wellbeing contexts. Her work focuses on opening up the design process to include academics from other disciplines, industry partners, health professionals or members of the public. She designs for meaningful engagement and participation through innovative community engagement, insight gathering tools, workshops, and digital and service prototyping.

Jeroen Blom is a Research Fellow at the Institute of Design Innovation, Glasgow School of Art interested in interaction prototyping and making complex technological solutions tangible to explore in participatory design sessions. He has a background in industrial design and designing for various disabilities in an empathetic and empowering way.

Angela Tulloch is a Research Associate at the Institute of Design Innovation, Glasgow School of Art with a background in Interior Architecture and Service Design. She has versatile experience in working with multiple stakeholders across health, wellbeing and the creative industries with a focus on meaningful storytelling and engaging people in the design process. Her current research interests include the role of ethics in design practice and education.

Mafalda Moreira is a design educator and a PhD researcher at the Institute of Design Innovation, Glasgow School of Art looking at emerging design practices and design education approaches for new forms of designing. With an MSc in Innovation and Technological Entrepreneurship, and a Design Degree, she has international experience in the Creative Industries and Higher Education, having worked in management, operational and academic roles.

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Open Design For

EMPATHY

The Empathy Track featured strong papers that focused on empathic design, and raised important questions, including why “context in design is everything”. To highlight just two of the many papers we read for this stream - Inside the Aotearoa House by Christian de Groot and Johnson Witehir (who presented) introduced Maori rituals to those gathered in Hong Kong - as well as design student audiences in New Zealand - to reintroduce cultural traditions into the design process. Overall the paper offered an eloquent account of why in the context or colonialism, cultural empathy is important in design. Participatory Design - Dealing with Emotion by Esa Pursiainenm, Michail Galanalds and Mariana Salgado (who presented) discussed how social innovation designers working with communities need to better understand the role of emotion (affective as well as cognitive empathy) in the design process. It also to figure out how to better manage emotional connection and “contagion”. Ultimately, it is to consider inclusive and responsive protocols to aid all participants. Further papers, too many to summarise here, offered diversity of user-centred approaches, but overall in discussion the audience agreed that Empathy needs live human interaction, not just film or Virtual Reality, experiences, but mutual human engagement through which empathy can emerge.

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Participatory design fieldwork: dealing with emotions

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ABSTRACT

Immigration gives rise to global and local changes that challenge social norms and affect our lives. By involving immigrants in design processes, we emphasise designers’ responsibility for social inclusion. In this context, our main question is how to engage with immigrants in participatory design research.
To answer this question, we present a review of a recent research approach we applied in Helsinki (Finland) while collaborating with immigrants in a design project. Arising from this study, it is our recommendation that design researchers working with immigrants must take into account the question of emotional involvement. In this article, together with a mental health specialist, we analyze our findings in order to provide insights into how designers could create better interactions with vulnerable populations while conducting fieldwork. Among others, we recommend that dealing with emotions requires debriefing and defusing processes.

Keywords

immigrants, participatory design (PD), emotions

INTRODUCTION

Immigration gives rise to global and local changes which challenge social norms and affect our lives. Issues of migration are an increasingly important part of modern political agendas and of the changing landscape of cities. With a few exceptions design researchers fail to engage immigrants in design processes (see e.g Clarke and Wright, 2012; Björgvinsson, Ehn and Hillgren, 2012; Keshavarz and Mazé, 2013; Manzini, 2015). This paper is based on the premise that if we intend to undertake design for social innovation we need to include people from different backgrounds, such as immigrants (Salgado and Galanakis, 2014). In order to engage the so called hard-to-reach immigrants - since not all immigrants are marginalised and alienated - we need to invest resources. However, it is the emotional investment from all parties that is at the epicentre of the discussion that follows.

Engaging immigrants in design processes is not a straightforward process. Designers need to invest time and energy in order to engage immigrants and to encourage them to take part in design processes (Lammers, 2005). Additionally, the emotional investment in engaging with vulnerable populations - as many immigrants are - in design fieldwork should be an element of analysis. Our intention is to outline methodological insights in participatory design (PD) processes that foster collaboration with immigrants. More specifically, we present one case and describe the situation and the techniques we used in relation to emotions that are pertinent to the process itself. Lammers (2005) suggests ways to be attentive and self-revelatory listeners in order to create feelings of reciprocity and empathy with our research participants. Here, while analyzing the interaction with our immigrant participants, we discuss processes with emotional impacts that could have a positive influence on the collaboration between design researchers and immigrant communities during PD processes.

Other designers and researchers have been discussing emotions in relation to the responses that products raise in the viewers/users but in this case we wanted to focus on emotions in PD fieldwork (Oatley and Johnson-Laird, 2011).

Emotions are integral to interaction and support social goals such as assertion, attachment, and affiliation that are important stages during PD processes (van Dugteren, 2014). Other researchers in PD dealt in their work with empathy and try to understand the emotional connections between researchers and users (Izard, 2010). Emotions have no generally accepted definition, and researchers who continue using the term must therefore provide their own operational definition. Geographer Koskela (2000) with

her “emotional space” demonstrates that emotions are important in our experience of space but that they are considered messy, hard to analyze, quantify and rationalise. Similarly Kaakinen (2011) shows how emotions concerning people’s experiences of space have been traditionally, and derogatively, perceived as feminine. Our operational definition of emotion is based on the literal definition of the term, according to which an emotion is a strong feeling coming from certain circumstances, moods or relationships with others and which is intuitive (Oxford University Press, 2001). In our case study, we asked our participants to talk about their lives and they consequently recalled sad memories and talked about frustrating experiences in their host country. The emotions of our participants, and of ourselves as researchers, during our workshop are the focus of this discussion, which by acknowledging we hope to contribute to current PD research.

The Tree of Life

Under the auspices of World Design Capital Helsinki 2012, a group of independent architects, designers and social workers undertook the OurCity project. The project took place in Meri-Rastila, a multicultural suburb of East Helsinki. The aim of OurCity was to democratise design processes and to empower local residents to influence the urban redevelopment of their area (Meidän-Ourcity, 2012). In order to develop a grassroots plan as an alternative to the top-down urban plan drafted by the appointed city planners, a team from the OurCity group conducted a series of workshops and other events in which different immigrant communities were explicitly invited to take part. The specific goal of the workshop, which we present here, was to establish a relationship with the Kurdish community in the area and to learn about their varied relationships to their neighborhood.

Dina Fuad-Luke who has experience as a community worker, Mariana Salgado who is a design researcher, and Michail Galanakis who is an architect and researcher conducted the workshop. The three-hour workshop was held at the large multifunctional room of the Kurdish association in Meri-Rastila on April 28, 2012. Participants in the workshop were fifteen women who identified themselves as Kurdish, and aged from their early 20s to their late 40s. Of these some were related. Food was an integral part of the workshop’s planning, and the women had prepared traditional Kurdish delicacies. After the introductions, we presented the idea of the Tree of Life and offered personal examples. By introducing ourselves not only as members of the OurCity project but also as individuals and immigrants, and by including information about our family lives and backgrounds, we were able to create a reciprocal understanding, and a sense of trust.

The Tree of Life is a longstanding tool in narrative therapy and community work. It is a way to enable vulnerable people to speak about their lives in order to feel stronger. During the process, participants drew their own Trees of Life and spoke of their roots, skills and knowledge, as well as their hopes and dreams, and the people and places that have been important in their lives (Denborough, 2008). Our literature research revealed no precedent for the use of the Tree of Life in the field of design research. However, it is important to clarify that we did not use The Tree of Life as a therapeutic narrative tool. Our intention was to enrich the design work we were carrying out in the area.

In presenting their Trees of Life our participants told evocative stories. Discussions became serious and sad at times despite small children running about and music clips showing on the TV. There were a number of affinities between the testimonies. One seemed particularly representative: “In my home country, I had to escape from the police. In Finland, you are not free even though you are not in prison. When I came here I got a new life and I smiled at everyone. But Finnish people keep their distance and so I do not feel free. Real freedom for me is in Kurdistan. Freedom is in the mind and in the feelings.”

After this first task of the workshop, we set the table together and enjoyed the food our participants had prepared. We then proceeded with the second task, which made use of illustrated Dixit cards, a popular board game. All the cards were placed on the table and each participant had to pick two. The first card would describe the person’s current situation in Meri-Rastila or in Finland, while the second would describe how the person sees herself in the future. Participants attached their cards to blank pieces of paper and used colored papers to write stories connecting the cards to their lives.

After the workshop, we (the three facilitators) conducted a session that analyzed the drawings, the posters with the cards, and the stories told by participants. We had no predefined hypothesis or fixed perspective on this material and, as we went through it, we wrote down our own reactions on post-it notes. Later, we placed the post-it notes in groups to create what Beyer and Holtzblatt (1999) call “an affinity diagram”. We took notes based on these clusters.

Our workshop had a direct impact on OurCity’s design agenda as we took into consideration how our participants engaged - or not - with their neighbourhood. It became evident to us that our participants felt socially excluded. One said: “Finns do not care about our lives and our stories.” They felt disenfranchised, which was the most alarming result for us and one that we did not anticipate. Only a minority of our participants were employed and spoke Finnish, and even they did not seem rooted enough. One said: ”I do not think myself in Meri-Rastila, in the future I will go back to Kurdistan, I am counting the days.” The testimonies of our participants align with the previous results of a more comprehensive research project that inquired into the ways immigrants in Meri-Rastila use the parkland of the area. While they used the parkland for walks and recreation, they did not trust planners or planning in general in order to voice any of their concerns (Leikkilä, Faehnle and Galanakis, 2013). Similarly our participants expressed their frustrations regarding social services, ranging from healthcare to employment agencies. One expressed her frustration with the language services provided to immigrants that were intensive enough to be prohibitive to mothers with young children. They recognised that language was a prerequisite for entering the labour market and also recognised that in Finland employment equals integration. The workshop results were taken into account in the design of a survey that our colleague conducted at a later stage; a survey regarding immigrants’ access to social services (Fuad-Luke, 2012).

The main outcomes of our workshop were the identification of the need for services in the area such as appropriate language courses for mothers and recreational spaces in which immigrants could get to know Finnish people. In the Alternative Master Plan which was the main design product of the OURcity project, our findings were translated into a larger communal space for immigrants and Finns to gather, as well as a number of public spaces planned to be used by the diverse community in the area (Meidän-Ourcity, 2012).

A major result for us as design experts was that when engaging with non-experts - regardless of whether they were immigrants or not - we have certain unspoken expectations of the kind of feedback we anticipate to receive and that would be useful to our design agenda. These expectations are rarely fulfilled because non-experts cannot share the jargon and concepts we have internalised after years of studies and work experience. In our workshop we did not use area plans of Meri-Rastila as we had seen in previous planning workshops that maps are unfavourable mediums for establishing a common ground; simply put, many immigrant participants did not understand maps and area plans (Salgado and Galanakis, 2014). In retrospect, we can say that selecting the Tree of Life helped in establishing a common ground, discussing issues that mattered to our participants, and finding their connections to Meri-Rastila.

Engagement-Emotions-Reciprocity

The techniques employed during and after our workshop were not the only factors that encouraged the fluency of the conversation and the quality of data gathered. Even though we were three “outsiders”, with video cameras and sound recorders, we managed to create a comfortable atmosphere for the participants. These participants knew each other from before, and because of this they felt free to talk about their personal immigration stories, frustrations and feelings. Finally, and crucially, the workshop was held on their turf while we were their guests. These factors created a sense that we were in this together.

The way the meeting was staged was more important than the tools and techniques per se. Critical to the success of the workshop were our recruitment efforts, the group dynamics, our attitudes, and the choice of venue. Many decisions regarding the design of a participatory research evade strict instructions on techniques and implementation. At the same time these decisions define the research context and the type of discussions that take place. When we work with people from different cultural backgrounds the overall atmosphere - perhaps even more than the techniques applied - influences crucially our results. This workshop took place at the beginning of the design process of the Alternative Master Plan, that is, at the stage of inquiry into what mattered to local inhabitants.

Our props, images, and open questions triggered a wide range of emotional responses, which in turn, created a space of intimacy that facilitated deep reflection. Our choice of participants afforded greater ease in openly criticizing the status quo of the host society and what troubled them. Therefore, while the scope of our research and its results may be limited, they do represent our participants and, as such, merit consideration.

During our workshop strong emotions were triggered due to several factors: the visualizations, the relationships amongst the participants, the overall atmosphere, the open-ended nature of the questions and the content of the discussion, namely, migration stories. As design researchers, we are neither trained in dealing with emotionally charged situations during research, nor in analyzing data while considering these emotional factors. In retrospect, we realise that as much as it is positive for people to reflect on their life stories and talk about their aspirations, it is also ethically questionable to incite memories of painful events. Rigorous thinking about ethical issues could have made our research more reflexive and made us more proactive regarding the emotions our research could potentially stir up in both participants and ourselves.

It was exhausting and often overwhelming to be keenly aware of the emotions of our participants. As organisers of the workshop we had multiple roles: confidants, translators, facilitators, and investigators. In these roles we oscillated within a wide range of emotions varying from sadness when our participants got sad, to joyful when our participants were happy. McDonald (2003) studied the legal needs of abused immigrant women in the US. She concludes that issues of empathy are unavoidable in participatory research which empowers women, insofar, as the boundaries between researcher and the researched are blurred in the process of building emotional and intellectual connections. Ezio Manzini (2015, p. 62) discusses design for social innovation as “everything that expert design can do to activate, sustain, and orient processes of social change toward sustainability”, the latter including social sustainability. In these multifaceted processes the designers are enablers to communities to find the best solutions that correspond to their problems. Manzini does not mention empathy as an ability pertinent in any of the potentially emotional proceedings - such as storytelling or place making - of design for social innovation (2015, p. 125, 189). Similarly, Cipolla and Bartholo (2014) argue that socially responsible design does not need empathy because empathy does not require from designers the immersion into other people’s realities. Instead they propose the cultivation of “inclusiveness” that puts designers and their participants on an equal footing. In other words they claim that empathy maintains the “I” vs. “it” dichotomy - what in sociology is often discussed as “we” vs. “them” - while “inclusiveness” suggests a dialogical connection between “I” and “you” (ibid., p. 87). As we understand it Manzini, as well as Cipola and Bartholo consider soft rationality not emotional entanglement as part of design processes. We, on the other hand, agree with McDonald (2003) that empathy is important, and that working with vulnerable people most often than not entails strong emotions. We argue that participatory design processes that involve vulnerable people require from design experts an understanding of, and a commitment to, social and ethical discourses on emotional involvement. This requirement does not necessitate the assimilation of design experts and their participants. Empathy may help designers and their participants to share on an emotional level that at times may be deep. As we will see further on, precisely because of such emotional entanglements, design experts should be able to empathise with, but also to detach from, their participants.

In our case, while we felt empathy, we were also quite conscious of our roles and research questions, and tried to keep our emotions at bay. While we shed tears because of some very sad stories, we could not but also feel privileged because, although immigrants ourselves, our life trajectories were so completely different from those of our participants; we do not have family members in jail and we can visit our home countries whenever we want.

Dealing with emotions in participatory research is never simple. While researching the marginalised or people in diaspora, feelings

cannot but run high. It is the researcher's responsibility to be able to tackle emotional issues of inter-subjectivity, empathy, self-disclosure, and vulnerability pertinent to all stakeholders, including themselves. This holds true for PD research involving, in this case, immigrants: emotions, even when they are controversial, are unavoidable, and design researchers must look into other fields to learn how to deal with and report on emotions, rather than push them under the carpet. In fact, the emotional opening of our participants clearly took us by surprise.

When Emotions Run High

Light and Akama (2012, p. 61) argue that participatory methods cannot be seen in isolation from the people engaged in them as they are "[m]ethods and techniques [that] require embodiment". This embodiment could be painful in research situations in which traumatic events are discussed. Researchers, as receivers of the participants' emotions, need to have time and space for reflection to review the situation; this, in psychological terms, is called "defusing". Defusing contains emotions and is one technique that psychologists use after having sessions in which traumatic situations are discussed (Dyregrov, 1997; Magyar and Theane, 2010). At the end of this kind of workshops, the participants need to "debrief" what has taken place to stabilise their emotions. This way we ensure that participants do not leave in turmoil and upset (McLeod, 2015). Debriefing and defusing should take place at the end of a workshop such as the one we conducted. If necessary, participants could be invited to another debriefing session at a later day. In our case, participants expected that our workshop would not last more than three hours and we had not reserved time for debriefing and defusing. In retrospect, we can say that as such situations may easily arise, we must reserve time for debriefing and defusing. In addition, if the stories told during a similar workshop affect the researchers to the point that they, for instance, experience sleep disturbances, it is advisable that they consult a specialist for support. Not doing so, may have long-term effects.

Dindler and Iversen (2014) claim that personal and professional relationships are crucial to design outcomes and that the responsibilities of designers include awareness of this dynamic. This is the relational expertise of designers. We argue that the relational expertise of designers includes their emotional involvement and requires debriefing and defusing after collaborative sessions. In design research, we often pay more attention to games, props, and the tangible design objects used to support participatory activities, than to the emotional factors discussed in this article. This designer bias may be due to our longstanding appreciation of visual artifacts. In the context of research into immigrant experience, Hynes (2013, p. 13) asserts that "[i]nequalities of political rights, economic positions, psychosocial positions, gender and other social and cultural factors between the researcher and the researched all required attention". Therefore, methodological decisions are only one part of the process; another important one consists of the contextual factors and the relationships between the researcher and the researched.

The open-ended techniques we employed during the participatory process of our workshop suggest to design researchers the need to be sensitive and reflective. A degree of reflective improvisation is required while at the same time the researcher must be aware of the process underway. Emotions can also be seen as communications to ourselves and to others if we are able to interpret them and work with them (van Dugteren, 2014). While the techniques and context of our fieldwork encourage reflection on the personal lives of participants, we argue that we are not sure how to utilise these reflections for the benefit of the participants themselves. We do know, however, how to use these reflections as input in the design process for the benefit of participants and society as a whole. In Crossley's (2003, p. 44) words, "developing deep personal insight into people's experiences and communicating emotionally charged design visions broadens the role of the designer in the possibilities of developing a product, service or brand".

The PD activity we used supports the prospect of working with immigrants in the design of spaces, products, and services. It was particularly useful in the interaction with immigrants because the tools we used were largely visual, rather than language based (Galanakis and Oikarinen-Jabai, 2007). We found that no verbal communication is sometimes key, not only because participants are communicating in a language other than their own, but also because of the emotional state they may find themselves in. In addition, using non-verbal tasks, such as the Tree of Life and Dixit cards, is a way to give voice to the more silent participants in a group. In our case, our participants had time to reflect individually on our questions and then present to the group and discuss. Thus, while group dynamics certainly influenced each participant, at the same time each participant contributed to the discussion with her own perspective.

When we plan a participatory activity with potentially vulnerable people and we anticipate an intense atmosphere with accounts of traumatic events we advise to: a) encourage participants who get affected to spent some more time talking with us or personnel trained for debriefing, immediately after the workshop, or propose another session to talk more about their personal stories; b) reserve time to make a debriefing session with our colleagues just after the session in order to process the situations, stories, and emotions; c) be empathic with participants' emotions but also know how not to aggravate their emotions, when we gently steer them back to our research questions and the aims of the activity; d) offer our mediation in order for our participants to get help from, for instance, community workers and trauma specialists, in dealing with certain very distressing events in their lives. If we experience emotional outbursts from our participants, it is crucial to devote more time to listening. In such cases, we should put our design research agenda aside, and respectfully and compassionately listen. Very importantly, design researchers should convincingly argue for the provision of additional resources when our projects deal with vulnerable people. These resources would cover expenses related to language services and mental health support, as well as the monetary compensation of our participants. We agree with (Brand, Binder and Sanders, 2013), that there is room for further methodological research on "hard-to-reach" communities like immigrants. Such research would further our understanding on the impact of diversity on PD processes. Such research could also prove that there are no "hard-to-reach" communities but rather that special ways are required to reach out to them.

Conclusions

If we consider design a question of "problem-defining" rather than "problem solving" (Kalantidou and Fry, 2014, p. 5), including immigrants in participatory design processes may be key to transformative actions capable of producing social change. This is what Manzini (2015) calls design for social innovation and the Ourcity project may very well fall in this category. Focusing our research fieldwork on immigrants merits careful consideration, and so do issues of the generation and collection of field data, and presentation of research results (Salgado and Galanakis, 2014).

The methodological concerns discussed here are tied to sensitive ethical issues that participatory designers - in fact any designer - cannot avoid if they hope to design with immigrants. We agree with Crossley (2003, p. 42) when he states: "[...] little attention is paid to the softer aspects of how we experience daily interaction of mood, emotion and feelings". Paying attention to issues of emotions, trust, empathy, personal and professional relationships, and, why not, inclusiveness can only enrich design. When our research falls into the category of designing with the Other, recognizing design as a social practice requires dealing with emotions.

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Seeking stronger plurality: intimacy and integrity in designing for social innovation

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ABSTRACT

A seminal post-colonial scholar, Deborah Bird Rose (2004, 154) exclaims, 'the west collectively is the leader; it is closest to the future, and the rest of the world follows along behind'. Similarly, Design and Social Innovation is largely populated by case studies in Europe and the US, further reinforcing global hierarchies and certain paradigms. We speak to this politics and dominance from the periphery and share early insights from two international symposia on Design and Social Innovation in Asia-Pacific (DESIAP) to highlight the importance of exchanging ideas in various directions. We use Kasulis' (2002) heuristic of integrity to frame design that emphasizes rational, impersonal, discrete, externalised principles and models, in contrast to intimacy that starts from an interrelated view of designing that cannot be disentangled from the ecological, relational, intimate contexts in which it is performed. Using integrity and intimacy in our analysis, we heard practitioners undertaking community-led change speak of empathy, humility, respect, trust and emotional resonance that enhances the intimacy between entities already interrelated, embedded in contextual specificities. These cannot be abstracted by a model or a method for scaling or replication elsewhere, often desired in the dominant, integrity view of design. When relationships are foundational and heterogeneity is a contemporary context of designing with communities, we propose that the intimacy orientation can help shift from a weak form of pluralism towards a stronger one, and bring attention to cultural, emotional and relational entanglements that are integral to Design and Social Innovation – to work with, and through difference.

keywords

heterogeneity, culture, inter-relatedness

INTRODUCTION DESIGN LOOKING WEST

Academic discourses in Design and Social Innovation are largely dominated by case studies in Europe and the US, inadvertently creating a trend for seeking expertise, replicable methods and best-practices of their models, establishing an unspoken hierarchy and dominant paradigms of design. Theory, practice and discipline of design evolved through industrialisation, modernism and the Bauhaus, all of which originates from and is centred in Europe. Bousbaci's (2008) comprehensive article explains that design theory assumes particular 'model of the designer' that shapes design discourse through the late 20th century. His search for an underlying philosophy of design traverses through works by key scholars such as Christopher Alexander, Richard Buchanan, Nigel Cross, Bryan Lawson, Allan Newell, Horst Rittel, Herbert Simon, Melvin Webber, to illustrate shifts from Cartesian thinking in the first generation of design methods, through thrusts towards planning methodologies at Ulm and the emphasis of 'wicked problem' in second and third generations. His discussion reveals a consistent dominance of rational approaches in relating 'problems' and 'solutions', before 'post rationalist' models began to emerge around the 1980's, following Donald Schön's theory of reflective practice and the influence of feminism and anthropology in design. We explain that such models and rational thinking can be framed as an integrity-based orientation to culture and knowledge that emerged from philosophical modernism and Enlightenment (Kasulis 2002). This will be elaborated later, but here, when we note the names who fundamentally shaped the thinking in design, it starts to indicate circular patterns of theory proposed by a handful of people largely concentrated in Europe and US whose ideas are continually cited to perpetuate its authority and privilege. This reflects the broader phenomenon of the visibility of men and the invisibility of women and ethnicities in design, both in industry and academic texts (see Akama & Barnes 2009; Buckley 1986; Thompson 1994). Feminist and post-colonial theory exposes the mechanics of established canons and occupied theories where the dominant is unable to recognise its own power, privilege and penetration (Minh-Ha 1989). Our abstract opens with the quote by Rose (2004, 154); 'What is not in doubt in modern thought is that the west collectively is the leader; it is closest to the future, and the rest of the world follows along behind' – this power and politics is expressed in design where theories, illustrated by Bousbaci, constitute its centre and remain as the main point of reference.

When speaking to this dominance, the intention is not to displace it with alternative paradigms but to ask different questions that concern other world-views. For example, instead of seeking

growth, progress, replication and scalability of design in 'solving problems', what if we ask questions about how design can enable inter-relatedness, respect and reciprocity? These questions, beyond design, are foregrounded in many cultures and societies, shaped by philosophical, religious and spiritual evolutions in Buddhism, Confucianism, Daoism, Hinduism, Islam and Indigenous ontologies. Here, entanglements with the invisible and intuited cannot be severed – be that life force, gods, spirits, souls, totems and ancestors – where relational, interdependent view of the world does not start and end with rational individuals or within their lifetime. This view is often considered with suspicion, exoticism and mysticism by some rational thinkers. The holistic, embodied and interrelated view will be discussed as an intimacy-based orientation in the paper and we argue its importance in Design and Social Innovation discourse and practice.

However, when speaking from the periphery, we have to be careful of this political act as it often invites criticism and defensiveness. As the team of design researchers behind Decolonising Design (Abdulla et. al. 2016) state, rejection of papers is highly likely unless 'foreign' concepts are assimilated under European philosophies that readers and reviewers will be more familiar with. This is the unfortunate consequence of the orthodoxies of publishing in design where acceptance is often based on token gestures for accommodating diversity of perspectives, but never on the merits of the argument for a radically different world-view. Our overall argument is that Design and Social Innovation is in need of effort and commitment to sharpen thinking to embrace difference and accommodate heterogeneity as its central condition. We propose that an intimacy orientation to design can help shift from a weak to a stronger form of pluralism.

Design in the Periphery

Reflected in the term, 'The Asian 21st Century' by economists and political journalists, developing economies in this region are projected to outpace developed economies in Europe in this century. GDP growth of the ASEAN-5 (Indonesia, Malaysia, Philippines, Thailand, Vietnam) far outstrips that of the Euro zone (AUSTRADE 2015). Australia is entering its 24th year of uninterrupted economic growth, with GDP projection higher than that for the US, UK and Europe. This shifting economic climate is a significant factor in the growing attention towards the Asia-Pacific region as an emerging global leader. However, prosperous economies like Australia, Japan, Singapore and Hong Kong are facing challenges of balancing economic development with social and cultural sustainability, indicated by the emergence and popularity of Design and Social Innovation labs (see DESIS international network and government innovation labs like the PS21 division in the Singapore Government). Our worry here is how design accompanies and accelerates this economic growth and pursues a neo-liberal agenda because it is still framed within the precepts of industrialization (Girard and Shneiderman 2013). This then manifests in increased consumption and atomism (Fry 2009; Walker 2011), accelerated by globalisation. Ideology of progress and development is a European thought from the 19th Century (Chakrabarty 2009). The 'west knows best' thinking is still evident in the stream of 'western' experts giving talks and workshops to the 'locals' on emerging fields like service design, design thinking and social innovation, which apex cities like Singapore, Hong Kong, Tokyo and Shanghai are actively undertaking. We are concerned that this region continues to follow trends of looking 'West' to seek answers from Design and Social Innovation exemplars to address their own social and sustainable needs, inadvertently replacing cultural, traditional and heterogeneous practices with imported and dominant paradigms to 'design a better world' – a commonly heard catchphrase in Design and Social Innovation.

These concerns and observations fuelled the authors' motivation to host two international symposia and workshops in Singapore (2015) and Bangkok (2016) on Design and Social Innovation in Asia-Pacific (DESIAP). The political agenda behind DESIAP takes on the heterogeneous characteristics of Asia-Pacific, a region consisting of a constellation of islands, countries and a continent where many indigenous cultures have been resilient in spite of colonization. These events convened academics and practitioners who are initiating change in Australia, Cambodia, China, Japan, Indonesia, Laos, Malaysia, Myanmar, Singapore, South Korea, Sri Lanka, Taiwan and Thailand who generously shared their personal experiences of actively creating spaces and places for meaningful engagement, skills sharing, capacity building and purposeful transformation. DESIAP Bangkok 2016 also brought together leading researchers in the UK and the US whose participatory practices have strong feminist and post-colonial undercurrents that recognise difference and pursue questions of power structures in their sites of intervention. Their participation enabled us to bring this endeavor into international and comparative focus.

The richness of DESIAP 2015/2016 means there are more insights and discussions that will continue to emerge from this initiative than we can discuss in this paper alone. So, here we take a slice through one of the most complex and central features and pay particular attention to culturally nuanced way relationships are foregrounded most strongly, emphasising that all Design and Social Innovation practices are enabled and conditioned by this dimension. Our early examination of how relationships are constituted, nurtured and shaped can help provide ways to discuss why, what, when and how relationship matters. This contrasts sharply with other accounts of Design and Social Innovation, such as the work of Ezio Manzini (2015), a significant Italian authority in this field and founder of the Design for Social Innovation for Sustainability (DESIS) International network. In his seminal book, Design, When Everybody Designs: An Introduction to Design for Social Innovation, he describes 'collaborative encounters' as node-to-node exchanges of resources (time, care, experience, expertise) to create shared value between individuals. Here, individuals are considered having free will and choice, skill, ability and resources to participate in co-producing value. Granovetter's (1985) social network analysis of 'strong' and 'weak' ties are used to further enhance impersonal and detached descriptions of relations. When such general descriptions of relations repeat in design reporting, it compels the notable anthropologist Lucy Suchman to lament the phenomenon of designers 'from nowhere' who continue being 'ignorant of their own positions within the social relations' (2002, 95) to continue to omit complex and nuanced conditions that shape how people are embarking on change. This is not a new critique, yet we argue that such persistence is also due to the dominant thinking and circular descriptions of design.

We question the orthodoxies in design while noting that the authors have been conditioned by such paradigms through our education, work experiences and where we currently teach and research in the UK and Australia. Yet inscribing our heritage and upbringing – one who grew up in Japan and the other in post-independence Malaysia – is significant to highlight because being 'othered' as Asian women living and working among a dominant group that is taken as a point of reference, is also a condition of our existence (Minh-Ha 1989). This compels us to recognise our specific cultural roots as a political act rather than homogenise them under 'multiculturalism', and make these matter in designing. We seek to trouble literal and static distinctions of cultures that are assigned to countries, nations or groups of people to recognise that ideas have been exchanged globally for centuries. This embodiment of cultural plurality is a shared condition that characterises many DESIAP speakers who are 'multi-local' and have diversity in heritage, language, upbringing and in places where they choose to live and work.

As mentioned earlier, our agenda is not to set up dualisms or to displace dominant constructs in design. Following Homi Bhaba (1984, 127), our work here is to disrupt a dominant gaze and power, to continually produce slippage and difference to resist conformity. This discursive process 'does not merely "rupture" the [colonial] discourse, but becomes transformed into an uncertainty which fixes the colonial subject as a "partial" … "incomplete" and "virtual"'(ibid). By calling out the partial, incomplete and virtual idea of the dominant constructs of design, we seek to find a 'middle ground' and what the cultural philosopher Thomas Kasulis (2002) might call 'complementary gestalt' or 'bicultural orientation' that side steps simplistic dualisms of West/East, North/South or even episteme vs phronesis, or integrity vs intimacy. This latter framework is Kasulis' (2002, 20) heuristic to understand cultural difference that are not defined by fundamental distinctions but rather 'what aspects of our humanness a cultural tradition tends to emphasise, enhance, and preserve as central. What is foreground in one culture may be background in another.' The term 'culture' is used broadly by Kasulis to include nations, gender, socio-economic, ethnicity, and subaltern. His heuristic generalization of integrity and intimacy is one axis out of many as a way to consider what cultures see as central or peripheral, ground or figure. Similar heuristics appear when Chakrabarty (2000, 18) talks of analytical and hermeneutic traditions in social sciences where the first 'evacuate the local by assimilating it to some abstract universal', whereas the hermeneutic tradition 'produces a loving grasp of detail' and 'thoughts intimately tied to places' to understand the diversity of human life-worlds. Similar patterns repeat in various discourses to frame a discussion, and we note that divisions are not that distinct or arbitrary but fluidly oscillate in-between the two.

Intimacy and Integrity in Design

Kasulis states that intimacy and integrity are orientations that describe recursive cultural patterns that determine different ways of relating. The integrity view sees relations as existing externally between two independent entities. This relation has to be constructed according to an agreed value or principle, for example, treating another as autonomous agent with the right to self-determination. Kasulis calls this orientation integrity based reasoning because the two parties have their own integrity outside the relationship. He suggests principled people believe in external set of values and standards that are applied to different situations. These principles, not the situation, guide the behavior.

In further explaining the integrity orientation, his analogy of seawater and sand can be very evocative. Sand and seawater have a strong relationship. Sandbars affect the formation of waves, and waves sculpt the sand from the floor that is then deposited on the shore. Yet their relationship maintains its respective integrity - seawater remains seawater and sand remains as sand. In other words, its constitution remains the same - their relationship is external in its combination. When using this analogy in describing people, Kasulis explains that formal principles between person 'a' and person 'b' constitute the integrity view. It makes little difference who a and b are, which allows the relationship 'R' to be made universal a(R)b. 'R' remains constant in relations such as b(R)c, a(R)d, and R can be expressed as a principle. When a and b enter into a relation R, it is an external relation where a and b are essentially unchanged.

The integrity orientation to knowledge is similarly external where the knower is independent from the known. The integrity of knowledge and the integrity of the knower are maintained by agreed rules and principles to deal with disagreements and to allow that any knower can attain the same knowledge. Integrity-dominant societies see knowledge as available to all, and its public demands that knowledge should be freely shared.

From this, we can see how the integrity orientation is a common foundation for a number of ethical theories, such as the concept of human rights, the Golden Rule and Immanuel Kant's categorical imperative. Individuality, autonomy and independence are strongly valued. Integrity-based knowledge values empirical observation and logical reasoning and can be traced back to the quest for a pan-cultural ground through Plato, Aristotle, The Renaissance, Enlightenment and Modernism (Kasulis 2002).

Design theory that emerges from this view is captured well in Bousbaci's 'model of the designer', discussed earlier. Ethics in design also emphasises principles that guide a designers' behavior. For example, Tony Fry's (2009) Design Futuring: Sustainability, Ethics and New Practice argues for a complete reconceptualization of design for new forms of living; and Ezio Manzini's (2006) Design, Ethics and Sustainability: Guidelines for a transition phase on how to make conscious ethical choices in the steps towards sustainability. Common to all of this is an integrity-oriented design discourse where knowledge is rhetorically and persuasively presented in rational, impersonal, and publicly contestable ways. Design knowledge, process and methods are imagined as universal so it can move easily between places and people, and this explains why various versions of the Double Diamond and Stanford d-school models are commonly used.

In contrast to integrity, Kasulis proposes the notion of intimacy that begins with the assumption of inter-dependency that inherently already has a connection, which seeks to highlight, enhance or find points of commonality between people. This means to be engaged in the contextual specificities of the overlap, determining and changing the very nature of those involved. Using a similar analogy of the sea, Kasulis describes intimacy like the relationship between water and salt that becomes seawater when merged. Their independent identities, as salt and water, disappear to become seawater as an intimate relationship. Intimacy's

etymology as innermost is an opening up of one's thoughts, feelings and motives. 'We enter into intimate relations by opening ourselves to let the other inside, by putting ourselves into internal relations with others or recognizing internal relations that already exists' (Kasulis 2002, 43). Intimacy favours interdependence, rather than independence. This means 'a' is partly 'b' and vice versa, and the relation R is a shared, internal one. Rather than defining things by opposites and isolating parts from what they are not, intimacy seeks to discover the overlaps that are already there.

Similarly, the knower and known cannot be separated, because knowledge is relational to the person and reality. This means knowing is also partly learning about the knower. 'Intimate knowledge's objectivity… is accessible only to those within the appropriate intimate locus, those who have achieved their expert knowledge through years of practical experience' (Kasulis 2002, 35). Knowledge is thus absorbed and incorporated into the body through praxis, rather than acquired externally and existing independently to that person. Intimacy is personal, tacit, intuitive, affective, situated and is achieved through practice.

In design, the intimacy orientation is visible through feminist, anthropological and postcolonial influences in Human Computer Interaction (HCI), Science and Technology Studies (STS) and Participatory Design discourses. For example, Shaowen Bardzell (2010) warns of the danger of demoting cultural, social, regional and national differences in promoting timeless and universal cross-cultural design. Ann Light (2011a; 2011b) writes about interdependence and problematises computer formalizations that perpetuate the status quo and argues for plurality and deferred commitment to values as a way of resisting. Instead of 'ethics' and a principle-based approach, Yoko Akama (forthcoming) pursues 'mindfulness' as a practice of unlearning and surrendering when designing with communities. Other design researchers such as Rachel Clarke and colleagues (2016) write themselves strongly into their design accounts to recognize positionality, reflexivity, the specifics of participation and the established conditions that shape the contexts in which they intervene. These scholars, who were also participants of DESIAP Bangkok, argue that we are already entangled in ecologies of systems and influences, and any design interventions are from 'within' and cannot be seen as external, isolated or independent.

When we examine empathy in design – a theme for this conference – it can often emphasise the integrity orientation, framed as a skill, characteristic, a method associated with user-experience research or a process like 'empathetic design' to gain insight and inspiration (Kouprie and Visser 2009). See how 'Open Empathy' call describes empathy as an 'essential mental habit' that informs human action, where designers 'separated from the so-called mysterious-to-them users' can benefit from 'introducing empathy into their research processes' (Cumulus Hong Kong 2016). Psychological roots of empathy start from separating self and other where the self is reified and actualised in order to walk in the others' shoes to achieve an emotional identification or grasp the others' internal frame (DeTurk 2001). This view is problematic when working across difference as it can omit the positionality of the perceiver, reinforce divisions of power, ignore unpleasant dimensions of empathy to assume people as innately 'good' (DeTurk 2001; Gunaratnam 2003). In contrast, the intimacy view of empathy takes a relational, co-constructed encounter, where overlaps are recognised as much as points of disconnect. In this regard, empathy can be considered as a communicative action, like a dialogue, contextually emerging in-between. To see empathy in a processual way acknowledges its partial incompleteness so 'connection is worked for, with and through difference' (Gunaratnam 2003, 102) by those already interrelated to discover how their own positioning and perspective is fluidly and continually constructed through encounters with one another. This means pursuing intimacy as an alternative to the way empathy often features in design, can foreground a different orientation to relating.

In the following section, we pursue the intimacy view to counter-balance the integrity-oriented tendencies we see dominating in design and suggest how an intimacy framework can help bring attention to cultural, emotional and relational entanglements that are integral part of Design and Social Innovation. We selected five (out of 27) presentations, determined by how we (the authors of this article) found resonance with and compelling insights in their practices from an intimacy orientation – a resonance felt and intuited through our co-presence at the events and through our personal cultural heritage and backgrounds, which provided a sense of familiarity. This is could be considered as a 'methodology' for this paper which may trouble design orthodoxy that demand un-biased, empirical way to evidence data and 'verify claims', in other words, an integrity view of knowledge to rationally and impersonally analyse the presentations and transcripts. Rather, in line with the paper's argument, our knowledge here is oriented by pursuing points where the knower and the known overlap.

An Interrelated World-View

In contrast to most Design and Social Innovation accounts in Europe and US where open communication, mutual understandings and individual rights-based approach is assumed and expected, the presenters selected here work in conditions where hierarchy and social stratification are prevalent. We take an intimacy orientation to highlight how relationships are nurtured in such conditions.

In Singapore where top-down authority is revered and unchallenged, Tong Yee co-founded the Thought Collective – a collection of social enterprises, such as a café, a learning centre and publishing house ¬– to foster a culture of trust through conversations. He shares that hierarchy is not about roles but a respect and recognition of experience; 'the problem with hierarchy is to think that I must know, to lead everyone else', so instead, he tries to have irreverence for taking oneself too seriously as well as humility and fascination for experiences that other people have. This evokes the intimate view of empathy where connection is co-located through respecting and recognizing experience that can come from seniority. Respecting hierarchy can mean a culture of learning from elders. This comes to the fore when M. Ibnur Rashad 'walk the ground' in the kampong kampus in Singapore where he would meet aunties who sew and weave or uncles who do carpentry and learn lessons of life in focus and patience. M. Ibnur Rashad and Tay Lai Hock established the Ground Up Initiative in Singapore to foster social and environmental consciousness through programs and activities that emphasise humanity and living in harmony with the Earth. Kampong (village) might be considered as anti-progress or imbue romantic ideas of a by-gone era in the cosmopolitan vision of Singapore, but Ibnur's story shares intimate relationships in the way he refers to members of the community as aunties and uncles and the cultural traditions of learning from and respecting elders.

Confucian and Buddhist influence of learning is strongly inflected, not just from elders and seniors but also features as reflection, self-cultivation and 'unlearning', to awaken new ways of see interrelatedness and catalyse a continual becoming. We see an intimacy orientation here where learning about the world is about learning about oneself (Kasulis 2002). Tong Yee describes this as another feature of fostering trust in his social enterprise where he stresses being 'open to learning is key' and a 'learning culture … as a culture of beginning'. Knowledge here is not impersonal and rational, but is shaped by who people are and dependent upon the company they keep. Joseph Foo, a designer, curator and teacher in Malaysia chose 'neighbor' to indicate learning through inter-dependent and inter-cultural reciprocity that is aimed for by his initiative, Neighbor Program, a platform for art and design students, lecturers and other experts in Southeast Asia region to participate, share, reflect and respond to local culture and issues in a global context. This network offers a complementary gestalt to the model of learning from the 'West' or in 'Western' frameworks, enabling students from different regions to draw out connections without seeking homogeneity and promote appreciation of differences in values, thoughts and behaviors. Similarly, the Dhammagiri Home Project was initiated when Joseph's friend, a Buddhist monk, needed to build a larger home for hill tribe orphans in the remote province of Mae Hong Son, located in the mountains of the northwest of Thailand bordering Myanmar. The project is a labour of love for Joseph, where the project became a personal and powerful way to learn from others, not just the skills required to plan, design and construct a sustainable building, but also the humility to value, playful, educational and spiritual dimensions from the orphaned children.

Hierarchy and social stratification are not seen as barriers, because when relationality starts with interrelatedness, it means finding ways to learn from differences and work across divisions, heard in Tong, Ibnur and Joseph's stories. Similarly, Viria Vicit-Vadakan is a designer from Learn Education, a social enterprise that works integrally with various socio-cultural contexts in the Thai education sector. Viria passionately spoke about access to education for underprivileged students and the significant challenges they face, illustrating her talk with experiences of spending time with families living in poverty and the constant precariousness of their conditions, such as the fear of a bailiff banging on the door at midnight. Being a teacher herself, her empathy with fellow teachers who work in difficult circumstances was pronounced, particularly those who are unqualified in content knowledge because of requirements to teach across subjects to students from broken families, and the need to give pastoral care. This indicated an emotive identification with teachers and students alike where Viria 'mirrored' their feelings, recognizing the intimate, internal overlaps that already exist. Learning here means to identify what students' value and cultivate trusting, authentic partnerships among the students' learning circle. Like Kasulis' view of relational interaction, such relationships cannot be achieved without the genuine availability and readiness of the different parties to be present, which problematises the agency often attributed causally to designers, techniques and technology for social change.

Emotional resonance is significant here. Tong Yee observes how trust is high in their social enterprises and the spaces they foster for dialogue, imbued with an atmosphere of laughter, minimal politics and tension. These echo Kasulis' (2002, 28) description of creating intimate contexts where 'people feel free to say anything, to share their inner secrets. Trust permeates the conversation … there is no need (indeed no possibility) of censuring or hiding what is innermost'. M. Ibnur Rashad shares the importance of 'heartwear', suggested as a contrast to 'software' (process / mindset / system) and 'hardware' (tools / technology) in design, and the intimacy orientation is compelling when Ibnur explains that 'heartware' must be part of the software and hardware. This sense of 'heart' is emotion, personality, soul and a sense of self in a design processes, systems, tools and technology, which evokes this quote from Kasulis (2002, 37): '… if I were to lose anything with which I am in intimate relation – my family, my close friends, my home, even my dog-eared reference books – I would lose more than something I have. I would be losing part of myself.' This could be interpreted as a similar socio-material view argued by many researchers where the designer and the method they enact cannot be separated, but can go further to imply a complete interfusion where design process and technology are imbued by a person's heart. This intimacy orientation reminds us that it is impossible for another person to replace Ibnur or his relationships with the aunties and uncles in the kampong community, even if they are highly trained and equipped with techniques in co-design.

Items used and cherished by a loved one can often have this intimate relationship where the objects almost represents the person, imbibing their soul after their passing (Kasulis 2002). Yanki Lee's Fine Dying project in Hong Kong explores this intimacy in explicit and poetic ways where the public is invited to speculate what keepsake they'd like to be transformed into after they die. The inspiration comes from technology currently promoted by death care industries where the cremated ashes can turn into a diamond. A conversation about designing this jewelry seeks to catalyse conversations among family members about the meaning of death. While the subject is taboo in Chinese culture, Buddhist inflections of honoring ancestors and the circularity of life are sensed in the background. Spirits of loved ones are remembered through alters in homes, materials imbibe their spirit, and offerings like Joss paper are burnt to venerate the deceased on special occasions. This notion of legacy is heard in Yanki's account of an elder when participating in the project said, 'I want to be two pairs of diamond earrings for my daughters'. The consultation that followed revealed the daughters' fear of losing the earrings, and here, we can relate to such loss that powerfully evokes the fear of losing one's mother. Yanki further explains, 'that piece of jewelry isn't about one person but about that relationship', that suggests a way of seeing interrelatedness, reminding how connections can endure beyond an individual and their lifetime. Another example of a diamond that turns into a dispersal of light in a room also gave the possibility of the person being 'with you' in that moment. This form of intimacy is more than the body or the imagination, calling the presence of soul, spirits and life force (chi in Chinese) as an inseparable constituent of relationships. Again, these are cultural dimensions that can often be omitted in an integrity-framed worldview. As Yanki demonstrates, designing can reveal and activate this connection and becomes an intimate part of this relationship. Poignantly, discussion on dying invited personal comments from the audience where someone spoke of beauty, release and

forgiveness when scattering his father's ashes in the sea, or another's Hindu belief that the body is just a vessel for the soul that departs as smoke during cremation. These were felt as moments of intimacy where we each located ourselves in the overlaps in an interconnected and shared experience, contrasting with standard dynamics of impersonal questions and debate that take place during most design conferences.

Even if one might not have any experience or know the communities and contexts described by DESIAP participants, we cannot ignore the power of these stories. They are spoken from the personal, intimate knowing of situated accounts, and these reach out and touch the edges of our own personal, intimate knowing of being human across contextual, cultural difference. They evoke our own relational experiences. Audience and readers alike may recognise these stories as authentic accounts, perhaps even resonating with their own experiences in the field and design with communities. This form of intimate knowing positions oneself as a participant in the story by locating points of entry into inter-relatedness, rather than starting from rational detachment to be convinced through intellectual argumentation. As Kasulis suggests, this intimate knowledge is accessible to those within an appropriate intimate locus by those who share praxis.

Conclusion: Recognising Intimacy Orientation in Designing

When the integrity orientation dominates in design, as we have demonstrated here as methods, techniques, models and structures, they are described as rational, impersonal, discrete, externalised principles and entities. Undoubtedly, these also feature in the DESIAP speakers' practices, in the double-diamond process used by Mariko Takeuchi, a design strategy consultant in Cambodia, and Ingrid Burkett at The Australian Centre for Social Innovation, as well as in the models of innovation engines in Japan, shared by Fumiko Ichikawa at Re:Public. These are powerfully articulate and compellingly persuasive in demonstrating abstraction and application of design, while also emphasising, enhancing and preserving the cultures of design so it can be shared, recognised and communicated pan-culturally. Yet, the speakers also explicitly or tacitly disclosed dimensions that could not be articulated in a method, model or principle, revealing that their practices in social innovation emerged from an interrelatedness and embeddedness within their place-based conditions. For example, Tong shared models of their social enterprise through highly articulate innovation processes but cautioned how such models do not lead to innovation, stressing the efforts he personally makes and the culture he nurtures in his social enterprises for a trusting, learning, humble and respectful relationship through dialogue. Viria's approach to social innovation highlighted intimate ways 'to be there for the other person' compared to an ethical integrity 'to be fair to the other person' (Kasulis 2002, 120). Ibnur's importance for 'heartwear' to be part of methods, techniques and technology of design, speaks of the irreplaceability of a person's heart and soul with designing and what is being designed. This echoed Joseph's design of an orphanage, borne out of love and spiritual embodiment, and Yanki's story of a diamond that maintains interrelatedness with loved ones after their passing, revealing a world-view where invisible 'superstitious' dimensions are always there, co-evolving alongside societies.

Taken all together, we can start to see the inadequacy of an integrity orientation of design because it necessarily strips away certain phenomena, such as the personal, cultural, tacit, affective and spiritual dimensions that constitute relationships. These matter, because relationships are the 'material' of designing social innovation practices, contrasting with design that was tethered to production of objects and confined within ateliers, studios and work-place settings. This is important because the domination of an integrity orientation in design also means that it can prevent ways of revealing, recognising and enhancing the intimacy between people and seeing constituents as already inter-related. Working with communities or groups of people is a context rife with contingency where needs emerge, dynamics change and all constituents of change process is continually reconstructed (DiSalvo et. al. 2013; Light and Akama 2012; Yee and White 2016). The speakers at DESIAP, and the stories shared by the five presenters here, is a further reminder to foreground an intimacy view and to recognise how such intimate dimensions are integral to designing, and not separate from it.

Many scholars have pointed to cultural heterogeneity as a contemporary context of designing with people (eg. Akama 2014; Bardzell 2010; Light 2011; Winscheirs-Theophilus et. al. 2012) and the need to acknowledge the multiple and invisible dimensions that are inherently entangled in making change. We need to sharpen our ways to accommodate difference, so that a practitioner embedded in this space can work with the dynamics, plurality and serendipity of the condition, in other words, the chaos of messiness and change that demands respect, receptivity and responsiveness. Instead of searching for common patterns in Design and Social Innovation or replicating 'successful' models that follow well-worn routes of colonialism, we need to broaden our own frames of design to enhance what Kasulis calls a 'bicultural orientation' or 'complementary gestalt' that value both integrity and intimacy orientations in designing. As discussed in the introduction, this broadening also means to question and disrupt the dominant gaze and power to produce slippage, resistance to conformity and call for the 'partial and 'incomplete' way Design and Social Innovation has been framed from certain world-views. Embracing heterogeneity means to step outside of circular frames of reference of design within Europe and the US, and recognise intellectual developments from other regions as relevant to design theory and practice without framing them as 'exotic', 'nostalgic' or 'mystical'. Various spiritual, philosophical and ontological considerations can enter into design, having already shaped significant scholars in Asia-Pacific such as Homi Bhabha, Dipesh Chakrabarty, Nishida Kitaro, Trin T. Minh-ha, Linda Tuhiwai Smith, Gayatri Spivak, Lao Tzu and more, who question the dominance given to a particular way of seeing the world. These scholars can inspire and teach us, to move away from static and banal description of relationality towards embracing invisible, heterogeneous difference. The political agenda for DESIAP is to remind the importance of exchanging ideas through global flows in various directions.

We must shift from a weak form of pluralism towards a strong one in designing social innovation to embrace and work across cultural differences. An intimacy orientation proposed here could be one possibility to counter-balance the dominance of an integrity framing, and to bring relationality to the fore so we may attend to other kinds of questions, concerns and approaches that had been omitted from view before. This also means we cannot take social relationships for granted, nor see it as a backdrop for value-neutral designers to work within, and instead, attend to the situatedness of our social, cultural, political and spiritual encounters. The intimacy orientation can help us acknowledge interrelatedness while working across culture, geography and conditions, and find points of connection on the periphery of our work and inquiry that differs from our own world-view, and to foster respect, resonance and responsiveness to work with, and through difference.

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Inside the Aotearoa House; decolonising design education in Aotearoa New Zealand

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ABSTRACT

'Inside the Aotearoa House' was an interdisciplinary, cross-cultural design project that explored how the New Zealand home could be re-imagined through a bicultural lens. Guiding this was the whakatauki (proverb), 'Kia whakatomuri te haere ki mua; we walk backwards into the future, with our eyes fixed on the past'. This proverb is connected to the non-linear Māori view of time, expressing the importance of looking to the past and to ancestors for guidance. It is also a powerful metaphor about the importance of research and how the past can be used to reshape the future. Our central question was: "How would the things in our homes look, feel and function if the design process used to create them were shaped simultaneously by matauranga Mori (Māori knowledge) and Pākehā (non-Māori of predominantly British descent) design principles?". With this question, we were directly challenging the globalised nature of design industries and the affect they have upon local identity in New Zealand. In laying down this wero (challenge) the project was an expression of tinorangatiratanga (self-determination) and kaupapa Māori principles and approaches to research. It was executed with staff and students from Unitec, along with industry professionals.

By engaging in collaborative and cross-culturally located design practices, the research outcomes point toward an interesting set of principles for increasing empathy. Furthermore, the design outcomes indicate the emergence of an exciting category of culturally informed artefacts, engaging viewers and users with other identities and promoting the development of deeper understanding - without commodification or misappropriation.

Keywords

decolonising design, speculative design, empathy

Background

New Zealand (Aotearoa) is in a unique cultural position in that it is both bicultural and a multicultural country (Sibley and Ward, 2013). It is bicultural through the legally binding Treaty of Waitangi that the indigenous Maori signed with the British Crown in 1840, effectively establishing a partnership agreement. It is multicultural in terms of the profusion of cultural backgrounds its citizens now identify with. However, the complex, and at times conflicting, cultural relationship between Māori and Pākehā (New Zealand European) is by no means resolved. For the most part, the relationship has not been characterised by partnership and power-sharing, but rather by political and social domination by the Pakeha majority (Bateman, Cavanagh, Glynn & Macfarlane, 2007). The authors add:

This domination progressed through armed struggle, unjust confiscations of land, biased legislation and successive educational policies and initiatives that have imposed Pākehā language and knowledge to the detriment of Maori language and knowledge (Bateman, Cavanagh, Glynn & Macfarlane, 2007).

In some areas the tide has turned. Māori language and other customary practices are now finding their way into mainstream New Zealand. These changes are particularly evident in New Zealand's public cultural institutions such as museums, libraries and schools. Here, ***matauranga Māori*** (Māori knowledge) and ***tikanga Māori*** (Māori protocol) inform the design of spaces and how we interact in them. Yet, more needs to be done, particularly in the areas of art and design, to counter-balance mono-culturalism and its effect on both the New Zealand people and landscape. In a recent essay exploring bicultural approaches to urban design, Alan and Smith suggest, "If we accept the claim that a country's landscape is a reflection of its culture (Lewis, 1979), we may also have to accept that the designed landscapes and public spaces of Aotearoa New Zealand do not often adequately reflect its status as a bi-cultural nation". (Alan & Smith, p. 134, 2013).

Part of the continuing problem relates to commercial practice. Commercial designers in New Zealand exist in an interconnected global marketplace, and engage with local markets that are informed by global corporates. They also aim to export designed artefacts beyond the relatively small national market. Furthermore, when considering New Zealand's historical reliance on primary industries, its shrinking manufacturing base, and its recent history of colonisation and colonialism, it is no wonder that bicultural or even multicultural design is largely relegated to tourist attractions, souvenirs, and governmental initiatives.

Design Education in New Zealand

Historically the education system in New Zealand has privileged the majority non-indigenous Pākehā culture. This is at odds with the supposed bicultural status and foundations of New Zealand. Here, design education and practices are no exception. For the most part Design remains wedded to a Euro-American lineage. The cultural impoverishment of New Zealand design is particularly evident in tertiary education, where students are taught that design history and philosophy stems from Europe. For designers in New Zealand this has led to something of an identity crisis, both aesthetically and philosophically. New Zealand design is not European, yet neither is it recognisably from New Zealand. Recently, professional designers and academics attempted to tackle this problem at the ***Helix Symposium*** (Wellington, 2015). Hosted by the leading tertiary design schools in New Zealand, the symposium asked: ***How do we articulate the unique character of New Zealand design?*** In response to this, Witehira (2015) suggested the focus be shifted from articulating a unique character to generating one.

In order to tackle this problem within the specific context of art and design education, the Department of Design and Contemporary Art at Unitec set-up the Inside the Aotearoa House project. Here, undergraduate students from a range of art and design disciplines were invited to participate in the project as their semester-long studio. During the project students were aware they were to be part of research into their experiences. Students were given the challenge of conceptualising how the objects and materials inside an imaginary New Zealand home might look if conceived through a bicultural lens.

Through the delivery of this initiative we sought to investigate, develop and test methods to design from a bicultural perspective. And it is following from the impulse to engage design with New Zealand's bicultural fabric that this endeavour runs tangential to the normative approaches design research might take in pursuing empathic methods, or more concisely in developing an understanding of the user.

Specifically, this paper explores the research project in two parts. Firstly, it looks to unpack how the kaupapa Māori research paradigm shaped the development of the project, its implementation and the rules of engagement and interaction within the classroom. Secondly, the paper looks into the experiences of the students. Finally, it then proposes a bicultural teaching model that enables Māori and non-Māori designers to effectively engage with Māori culture, thereby creating design that effectively expresses a bicultural New Zealand.

Project Approach: Applying Kaupapa Māori Methods to Design

This collaborative project involved staff and students from a number of art and design disciplines at Unitec including; graphic design, industrial design, spatial design, visual arts and photography. Leading academics and experts in related subject areas were also brought into the project at various stages. This included Professor Charles Ahukarumu Royal (matauranga Māori), Dr Deidre Brown (Māori architecture) and Dr Damian Skinner (Craft/Object expert). The overarching method was one of creative speculation; the project ultimately sought to challenge and provoke, imagining a future, alternative or desired version of bicultural reality.

Whilst the majority of the students engaged in the project were of Pākehā descent, they had some appreciation of Māori culture through interactions within the primary and secondary education system in New Zealand, and through specific symbolic elements in sport and mainstream media. This is to say that for the majority of students Māori culture was not totally foreign, but it was deemed to be a distinctly awkward space, or too overtly a political landscape to engage with.

In some ways students were expected to pursue a relatively default mode of engagement, i.e. to create individual works. However, in pursuit of stimulating greater discourse and more importantly in pursuit of a deeper integration between conventional euro-centric studio pedagogy and kaupapa Māori methods, the formal class times were structured in such a way as to encourage collaborations between students and across disciplines. To ensure a level of coherence across the artefacts and images created for the Aotearoa House, the academic staff supported dialogue within the project (and across the disciplines) through the use of concept teams. These concept teams focused on different areas or zones of the communal living spaces in a typical domestic residence.

A kaupapa Māori research paradigm and strategy was used to shape the project. This ensured that the project was designed and undertaken in a way that respected Māori epistemology, a Māori world-view, and ***tikanga*** Māori (Māori practices). This also meant that the project aligned with the emancipatory goals of kaupapa Māori research, which support indigenous resistance, question hegemonic power structures and ultimately support ***tinorangatiratanga***. From this research standpoint there were three key areas of consideration; the use of language (te reo Māori), customary Māori modes of engagement (tikanga Māori), and engagement with matauranga Māori (Māori knowledge).

The first critical element of the project was the use of ***te reo Māori*** (the Māori language). At every possible stage, from conception, to staff discussions and project structure, through to studio sessions, Māori language was used alongside English. Here, the use of Māori language is important as a site of struggle and language revitalisation (Tuhiwai-Smith, 2012). Jahnke contends that, "there is a co-relationship between the survival of the Māori language and Māori as a people" (Jahnke, p.30, 2006). At the same time, using Māori terms to describe Māori things enables a more authentic engagement and understanding of Māori concepts. Where art and design is concerned the use of Māori terms also helps to address, "the incompatibility of Euro-centric terminology in capturing the essence of Māori visual culture" (Jahnke, as cited in Paama-Pengelly, 2010, p10).

Tikanga Māori, which encapsulates Māori modes of engagement in the real-world, also had a critical role in defining how the project was both designed and run. In figure 1, a number of examples if tikanga as they were enacted within the classroom can be seen. Well before studio sessions though tikanga was used to develop and establish the project itself. In the first instance a number of ***hui*** (meetings) were held to develop the project amongst staff from a number of disciplines. While hui are related to meetings in the Western sense, they differ in that there is no predetermined time limit. To cultural outsider's hui may appear to be unnecessarily long and unwieldy. However, as Durie (1999) points out for Māori, time is concerned less with the predictable completion of tasks in set time-frames, or punctuality, but rather is concerned with defining relationships and adding validity to experience.



Figure 1. Tikanga applied in the studio

Within the studio sessions tikanga was also enacted through the use of both ***karakia*** (incantation) and ***hongi*** (Māori customary greeting). Karakia, incantations recited with the staff and students, were used to open and close each studio session. In validating Māori ways of undertaking projects these karakia also gave an air of formality and meaning to what might otherwise be an everyday classroom experience. The karakia were critical in that they transformed the working spaces, even if only during sessions, into a place in which engagement with Māori ideas and knowledge was safe.

Hongi, the customary Māori mode of greeting was also performed by students and staff at the beginning of every class. This greeting, which involves the pressing of noses and foreheads between individuals, is about the sharing of ***mauri*** (essence) and ***matauranga*** (knowledge) between individuals. The pressing of noses connects to Māori cosmo-genealogical narratives about the creation of man and the first breath, or mauri, being blown into human-kinds nose. The pressing of foreheads alludes to the sharing of matauranga or knowledge. Though a small act in itself, undertaking the hongi requires moving into a very personal space with your peers, creating a level of intimacy and kinship between students that is normally not present in the classroom.

Designing the project from a kaupapa Māori perspective, the authors were also careful not create an atmosphere in which Māori culture and Māori-ness was considered as a "generic" body of people and experience. As Durie has pointed out, "Māori are as diverse as any other people - not only in socio-economic terms but also in fundamental attitudes to identity" (Durie, p.57, 1998). This approach pushes back against popular design strategies such as Human-centered design which dehumanise indigenous culture by assuming they want or need help in solving their own problems (Irani, L,. et al, 2010). Within studio sessions the diversity of Māori experiences and tribal cultures was acknowledged through the highlighting of differences in language, cosmo-genealogical narrative and terminologies relating to visual culture and history.

Contrasting Methods of Enquiry: Blurring the Observer/Participant Dichotomy

Formal methods for developing 'empathy and understanding for designers is typically associated with a desire or requirement to ensure designed solutions align more closely to the users of customers that actually exist, as opposed to the fictions designers can otherwise tell themselves. A great deal of development work has been spent on identifying, appropriating, and adapting research methods that aid the design profession in aiming their work at real rather than imagined targets.

Over the last two decades the variety of possible techniques and methods available to design and design researches has exploded, with new and novel approaches being adapted and co-opted from across the humanities and pressed into service as support for design understanding. What many of them have in common however, is a built-in 'distancing' or separation between designer (investigator) and user (identity). This separation is in certain ways a necessity, as commercial imperatives dictate that projects be delivered on time, and that products meet brand guidelines and corporate mission statements alongside customer requirements. Extracting designers from over-identification with possible customers or other special-interest groups would likely prove problematic for a product manager with a portfolio to manage and deliver on. Certain common-place tools (e.g. the use of 'personas') have recently come under scrutiny for being mis-used, or being fundamentally mis-leading by virtue of the separation that they unwittingly promote. In writing about 'personas', Portigal (2008) observed that 'Any process based in falsehood takes you away from being genuine … Rather than create distancing caricatures, tell stories'.

This project experiments with a more grounded approach, searching for a more resonant platform by which to enable designers to develop more substantial understandings of design, designing, and themselves (the designer). The project brief called for a design-led enquiry into the possibilities afforded by the development of biculturally designed artefacts, and in so doing created an important subtext or ulterior challenge: can design reframe its own approaches to better reflect the identities of those using, consuming, and designing these artefacts? By opening up the significant challenge of decolonising everyday designed artefacts to the residents of the self-same contested territory ensured that each designer that engaged would necessarily embrace (or reject) the deeper function of questioning the identity of the various elements.

Researchers of empathic design approaches, along with philosophers and psychotherapists have marked out various positions along the continuum of distance between the empathiser and empathee (Stein 1917, Lipps 1903, Rogers 1975). Research undertaken by Kouprie and Visser (2009) is helpful in contrasting these positions and theories, identifying that the key authors of theories on empathy 'describe the movement of an empathiser stepping into and stepping out of the empathee's life'.

Living in a world characterised by difference, the challenge in this project is one of stepping in and out of the many cultures that already make up the rich environment the designer operates within. It is less of a question of empathising in the first instance, but perhaps one of moving past the separating effect of 'user-focused'

tools and techniques, and moving into an acknowledgement of being an active participant in, and between, various cultures and identities. To this end, the kaupapa Māori approach of employing language, protocol, and customary knowledge, creates an environment for enabling a transitional process whereby the designer as observer can migrate toward the designer as participant. The designer effectively, and ultimately explicitly, participating in the bridging cultures, and performing within what Brown (2011) has labelled a third space, a space between two or more cultures. This third-space making approach is the method that the authors sought to monitor and evaluate the effects of.

Capturing the Student Experience: Indicators of Empathy and Understanding

The research outcomes point toward an interesting set of principles for increasing empathy through engaging in collaborative and cross-culturally located design practices. Furthermore, the design outcomes indicate the emergence of an exciting category of culturally informed artefacts that engage viewers and users with other identities, and promote the development of deeper understanding without commodification or misappropriation.

In order to capture the assumptions, perspectives, and understandings that the student designers had towards their own and other cultures, we planned on conducting surveys. For the purposes of developing a comparative lens on the impact of the project on their understanding, two surveys were planned to be undertaken during the project - one in the first week, and another during the last week.

The questions were developed under a framework that reflected the bicultural focus of the project: Māori & Pākehā. They also reflected its cooperative, multidisciplinary, and speculative nature. It was important to ascertain student data on the project-as-context, as this would potentially help frame student response to the basic typology of the project - potentially illuminating variations or data in the cultural empathy questions.

This three-part framework (Māori / Pākehā / Project) was developed into a series of questions that explored each arena in turn - enabling students to respond equitably, whatever their cultural background. The question typology was a mix of likert scales (offering a continuum of 5 descriptors) for questions that related to a quantity or capability, and open text fields for comments relating to questions that asked for their thoughts on previous questions regarding cultural understanding or empathy. The preliminary question in the surveys asked the respondents to indicate which culture or nationality that they most strongly identified with. This was designed to give us a baseline of the cultural makeup of the whole sample.

Both the section on Māori culture, and the Pākehā focused section were structured with the sequence as follows:

- How would you describe the level of your understanding of (Māori/Pākehā) culture?
- How would you describe the level of your empathy towards (Māori/Pākehā) culture?
- Describe your emotional response toward being asked to appropriate or engage with (Māori/Pākehā) customary knowledge and symbols in your work?
- If you have additional comments to make regarding your responses to the previous 3 questions, please write here.

The third and final section of the survey was focused on the nature of the project itself, asking respondents to indicate how they felt about working in an open, collaborative, and conceptual arena. These questions were introduced to help diffuse the focus on the cultural dimension, and more importantly to offer a control to the cultural dimension of the project. To be specific, it would help us identify whether students were already unduly distressed or confused by entering into a multi-disciplinary environment, and whether they identified strongly with their own discipline. The questions were as follows:

- Please indicate your level of comfort or discomfort when faced with an ‘open’ or creative brief?
- Please indicate your level of comfort or discomfort when faced with a conceptual (speculative) brief?
- Please name the discipline you currently study.
- Can you describe the level of understanding you have of your chosen disciplines process and knowledge?
- Can you describe the level of understanding you have of other, neighbouring creative disciplines processes and knowledge?

Research Results

The surveys showed the student participants experienced a variety of transformations throughout the project. In each area a migration in opinion was visible between the beginning and the end of the project. What was also visible was the comparative difference between a student’s understanding of, and empathy towards another culture.

Of the six questions that pertained to the Māori and Pākehā cultural dimensions, and required quantitative responses, four showed a positive statistical variation at the completion of the project. That is to say that in those four areas respondents felt that their understanding of that culture improved, they were more empathetic toward that culture, and they felt more positively toward engaging with that culture through design.

What is more relevant is the difference between the two groups of culture-specific questions. While respondents grew in understanding, in empathy, and in excitement toward design engagement with Pākehā culture, the same respondents only indicated a positive variation in their empathy towards Māori culture. The weighted averages for the responses to their understanding of Māori culture, and their affective response toward design engagement with Māori culture diminished. These results could initially be read to indicate that the project failed to deliver a positive transformation of student ability to engage cross-culturally. However, the additional comments that the students made in the spaces provided shed some light on these numerically negative variations. Their text-based responses indicate that through deepening their understanding of Māori culture, the experience had also made them more cautious, more self-aware, or more respectful to the complexity or validity of another form of culture and cultural identity. Three statements made in the later survey are emblematic of the whole sample, and are featured below:

“Although i wanted to understand the Māori culture, it is very difficult to grasp the essence of it in such a short time”

“I don’t believe that Māori or any indigenous culture should be ‘appropriated’”

“After this project, I feel like I have far less understanding of Māori culture than at the beginning. I have learned a lot, but have also learnt that there is so many meanings to so many different aspects of their culture”

The most marked transformations evident in the survey data occurred under the questions that related to empathy, as opposed to the questions pertaining to understanding or to degree of comfort in engaging with cultural materials of either Māori or Pākehā culture. For both cultures, the respondents indicated that their empathy toward a specific culture had significantly increased. This increase in the weighted average was double the next nearest indicator for Māori culture, and intriguingly was up another 75% for Pākehā culture. Considering that the majority of the students participating in the project and the survey were of Pākehā descent, this would begin to indicate that developing empathy for another culture has a compounding positive effect on your empathy for your own. Further detailed analysis, and a likely repeat of the entire project will be needed to establish with greater certainty that this is the case. However, at this juncture it is a positive indication of the potential gains through this approach.

Conclusion

This paper aims to relay both the application of Kaupapa Maori methods in the delivery of ‘third space’ cultural design-led projects, and to begin the process of evaluating the effectiveness of this approach under the auspices of stimulating an increased capability of cultural empathy in participating designers. The outcomes of the research indicate that some significant potential exists within these methods, and furthermore there are interesting indications of a development beyond understanding and empathy in the participating designers where a designer’s identity itself is undergoing growth.

The authors would like to conclude by saying that this paper is but an introduction to the various interesting and resonant issues that the Inside the Aotearoa House project has surfaced, and that further work is being undertaken to unfold the application kaupapa Māori method, the participant experience of third space cultural design work, and the qualities of the designed outputs that result from this approach.

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The body of design – process as communion in building empathy and participation for cultural and environmental change

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ABSTRACT

This paper outlines the beginnings of an experimental method which draws on ideas from performance, philosophy, theology and games theory to position the experiencing empathetic body at the heart of environmental design practice. This approach considers authentic design practice as an act of communion of bodies, artifacts and processes with the aim of affecting belief in a deep understanding of context.

Intuitive, empathic design requires a feeling interpretative body. Gendlin's therapeutic practice of Focusing, and it's philosophical extension Thinking at the Edge, uses an intuitive "felt sense" to achieve authenticity analogous to Polanyi's conception of tacit knowing. Empathy however is a relationship with others situated within context which is developed drawing on Latour's Actor Network Theory which situates the felt sense of the designer / experiencer as an actor in a network of other actors, and Bharucha's critique of decontextualisation, to form a critical construction of context (social, historical, economic and cultural) which aligns designers, users, materials and narratives. This method of context construction through rituals and habits therefore becomes the focus for understanding design as communion and is explored through experimental, dialogic approaches to environmental engagement.

Keywords

belief, body, environment

This paper focuses on the obligation for design to engage with the perceived empathy deficit, made global through US President Obama's public exhortations for communities to overcome this deficit in order to productively co-exist. Empathy in this context is the tool which enables multiple angels to dance on the head of a pin, the historical analogy of the inter-relationship of ideas (angels) and space (pinhead). Placing Obama's domestic focus on empathy alongside Drone (Hessen Schei, 2015), a documentary examining the effects on both civilians and service operators, of perhaps the most significant designed use of alienation to distance policy from combatants from target from collateral effects, reveals starkly that empathy is always situated contextually and ultimately ethically.

The contention of this paper is that authentic placemaking and designing for place requires a deep approach to empathy, and that this depth necessitates critical contextualisation. This is the aspiration of a radical design practice, and the condition of a practice that recognises that this aspiration is always already just beyond the practice. As a practitioner, theorist and educator my position is that design is premised on acts of belief revealing lived experience as accessible to design interventions. This focus on belief I want to suggest is more akin to a design theology, where design is understood as a communion of bodies, artefacts and narratives; and subsequently the aim of design is focused on the authentic manufacture of belief. The position paper begins with an introductory survey of influencing theories in forming the approach to empathic practice, followed by a two indicative approaches. The overall aim of this is to outline a framework for the beginnings of an open public pedagogy for the development of participants as placemakers.

Implicit in the use and etymology of the word, empathy, is a feeling body, analogous and perhaps indivisible from the sensory body of aesthetics. Subsequently there is also the necessity and assumption of a connection or shared human experience. The work of philosopher and psychotherapist Eugene Gendlin (1982), situates the feeling body at the centre of a therapeutic practice which he calls "focusing" where a bodily felt sense acts as a point of integrity within the therapeutic process. The felt sense then becomes an element which is translated and made meaningful in the context of the psychotherapeutic process. This translation is inevitably linguistic, and here we come back to the fundamental requirement that empathy is expressed through language and particularly metaphorical language as a means of establishing a common understanding of experience which is at the core of empathy.

For Lakoff and Johnson (2003), that metaphor is at the heart of lived experience reflects the learned bodily and environmental experiences that form us as humans living with other humans. Language is therefore always embodied, and for Johnson (1997) Gendlin's embodied approach provides a mean of accessing the reservoirs of embodied experience which are not immediately situated in conscious manifest experience. This process also mirrors Michael Polanyi's (1966) process of considering the importance of tacit knowing, embodied and subliminal knowledge in scientific investigation. For Polanyi there is always a domain of knowledge which is understood tacitly and is beyond explicit definition but subliminally influences the process of human development. Polanyi associates the tacit with peripheral vision, an absorbing of the whole field of vision, which along with the other senses, proprioception, and embodied memory are able to articulate the feeling body or subject within and engaged to its environment, both physical and cultural; as opposed to focal vision which identifies and articulates a space which is distinct and detached from the subject. Both Polanyi and Gendlin have located the significance of the body through an investigation into (psychotherapeutic or scientific) method and why it succeeds or fails. Whilst both thinkers also resist an absolutist, instrumental method for interpretation of the necessarily intangible aspects of unconscious knowledge and its interpretation through the feeling body it illustrates the importance of the body in forming an authentic interpretation whether of self, or of the external world.

This is further elaborated in the architectural design phenomenology of Juhani Pallasmaa, who attempts to reinsert the body into the design process in his book The Eyes of the Skin (1996), which describes the design process as an absorption into the practising body of the architect of the environmental, material and contextual aspects of site into a tacit knowledge which is intuitively manifested in the architectural design response. In a more analytical and sociological context, this is also mirrored in the Actor Network Theory of Bruno Latour (2007) which for our purposes conceptualises the design process as a network of relationships between actors, who in this formulation include non-human or material actors who acquire agency within the network. The network in this example being brought into being through the intentionality of the architectural design process. As a way of thinking about the intuitive design process, this is in many ways uncontroversial. The assemblance of the different factors in design as an organisation of material and conceptual knowledge in sketchbook or studio, and its tacit affect on design intuition, is well articulated. However, in this context the network explicitly aligns the intangible and non-linguistic alongside the tangible and linguistic around a common intent.

Empathy, however, requires a sense of the commonality, or communicability, of experience. Pallasmaa argues that there is a physical experience of space and form which is initially experienced by the architect both through the model as a scale projection and through the designed environment which is communicated and then mirrored in the physical experience of the user in an empathetic spatial relationship which may be separated by seconds, years or millennia. This is reinforced by the experience of handling artifacts of historical significance where handlers regularly narrate the sensation and awe in terms of the mirroring of experience across time, doing what our ancestors did. This gives added weight to Latour's insistence on the significance of material and non-human actors in the network of meaning, and also affirms the interrelationship of body and language.

Naming this process as a communion of shared experience invokes the Christian theology of the sacrament, a communion of people and artifacts with a common understanding of significance using the shared metaphor of the body of Christ, perhaps the most articulated definition of an embodied metaphor. This is where the act of naming and a shared understanding of that naming, is crucial in establishing the shared experience. In the act of communion there will be actors who are experiencing the act as an authentic experience and also those who will be experiencing the act "inauthentically" with different intentions, needs and beliefs in this process. Religious faith in many articulations stimulates a more questioning attitude of its tenets, than perhaps secular faith does of its tenets in scientific rationalism. This is where it is important to define the act of belief as being non-absolute, and where the intangible-embodied and manifest-linguistic definitions necessarily diverge. The participants in the process may have different definitions of their faith, whether publicly expressed or not they are vested in the conscious interpretation, however the commitment to the process itself and an acceptance of difference renders a level of authenticity in the process. That the act has endured over centuries, albeit in different incarnations is in part testament to this authenticity.

Authenticity has long been an aim of design practice, albeit an aim with competing definitions. This paper aims to situate design in the context of deep authenticity, a term previously aligned to deep ecology (Ims & Jakobsen, 2011), which I hope to clarify and develop in the context of a human centred design practice. In my formulation of the term, deep authenticity is an approach of aligning the design process with a systemic, holistic understanding of the context in which design occurs. In this definition there is little that is new, radical or indeed deep. It articulates what most practitioners, design or otherwise, believe that they undertake on a daily basis; and which is routinely problematised through everyday and professional critique. This idea of the centrality of belief is at the core of my contention is that design method can be understood through as the lens of theological method. The contention of this paper is that design is cultural in that it is an intervention into the complex interactions and relations of people and consequently of artifacts and processes. Assuming cultural to also includes the human interpretation of nature, this complex set of interactions and relations can be considered as an ecology or ecologies so that we can speak of the ecology of design generally and specific instances in which design occurs. Ecology being synonymous to a certain extent with the concept of network described previously. When we enact design we are defining the specific ecology within the general. Design becomes meaningful within that specific ecology which initially is intentional on the part of the designer, but subsequently is reinterpreted within different ecologies. Just as the Network requires the intentionality to inter-relate a set of actors; ecology requires an act of belief that the phenomena under consideration are interacting and interrelating authentically.

At this stage it is useful to consider the inauthentic, and also the problems of the assumptions of a common human experience. This assumption is at the core of Rustom Bharucha's critique of decontextualisation, a critique which he centres on western appropriations of elements of Indian performance rooted in specific social, economic, cultural and familial contexts. In his story essay When Eternal India meets the YPO (1997) Bharucha describes the

a cultural event staged for the Young Presidents Organisation, a group of Presidents of multi-national companies by an Indian cultural organisation desperate to show India's position in the modern globalised world. The event is to be an extravaganza which surveys Indian performance traditions, and therefore brings together performers from across India for this event in the assumed common spirit of Indian-ness. These are performance forms, each rooted in place, communities and families, where the performance, itself the product of years of intergenerational training, expands the experience of body and time. Each of these are to be summarised in a moment to satisfy a Western global consumerist attention span and curated into a generalised effect. The third player in this meeting is unexpected. The situation of the event is in Mukesh Mills a burned out bakery compex on the outskirts of Mumbai, used extensively as a backdrop for Bollywood movies. The residents of Mukesh Mills are the former workers in the bakery, a working class who have been cast aside in India's move towards the global economy. These urban residents create a blockade sealing in both the YPOs (whose needs are to leave the site) and the rural performers (whose needs are to be fed), and it is at this three way point of conflict that Bharucha leaves us with the question about the assumptions of cultural exchange and context.

Decontextualisation for Bharucha is a violence where the deep authenticity of traditional cultural production, often situated in a context of economic poverty, is transplanted as an image or process with only the traces of its authentic context. This process of transplantation is often at the service of intercultural dialogue or communication and often with the aim of constructing an empathetic relationship between different practitioners or communities. Bharucha's analysis requires us to situate the empathetic feeling body in a social, economic and cultural context, in opposition to an uncritical illusory empathy manufactured at the service of global capital. At a trite level, Bharucha's critique could be summarised as a failure to undertake a full stakeholder analysis and understand the stakeholders in the process of the Mukesh Mills event, however that failure occurs universally on a daily basis across the globe. The resonance of Bharucha's essay concerns the assumptions of cultural production when it ignores the social, the economic, the historical and traditional. Empathy is easy when you have a restricted context, everyone can find a common point of humanity just by being human and ignoring difference. It is the same as celebrating Barack Obama's focus on empathy between different domestic communities without asking whether that empathy extends to the victims of drone strikes. This we might begin to characterise as a critical empathy, synonymous with a critical pedagogy, predicted on an active enquiry into otherness with the aim of establishing a mutual understanding of contextual difference.

The question of how a context is constituted, and more specifically the line which determines what is inside or outside of a context is a driving consideration for Jacques Derrida. In the afterword to Limited Inc (1988), Derrida draws together a body of thinking about context to focus on this binary definition of inside and outside the context. For Derrida, the act of drawing a line, whether a frame around a painting (ref) or a context around a subject, defines both the space inside, but also defines a space outside. This act of definition names the external and therefore brings it into being within the context. This opening becomes an ethical imperative to expand the context, in effect redrawing the line around an expanded context. This new line then creates a new opening which expands the context further, and so on. A definitive shared meaning is always deferred, each deferral adding to a partially tangible contextual meaning which is always in question. This approach to binaries we can also apply to the ones used in this text, to suggest that deep authenticity is a process of opening to the tacit, to the intangible, to the marginal, to the ignored and the peripheral.

So far this theoretical survey has an implied focus on the role and obligations of the design practitioner. However, the question of empathy and deep authenticity requires that we consider the role and obligations of the user, and more specifically the opportunity for a public design pedagogy which immerses the user in the act of communion required to align belief systems in order for that empathy to occur. In this formulation, empathy between designer and user becomes an analogue and an incentive for empathy between different users. The approach takes a cue from Ian Bogost's (2010) notion of procedural rhetoric, which argues that the procedural steps in a video game are more persuasive than the communicated "message". This is entirely consistent with the rest of the theoretical framing that I am using, which centres on the interrelationship of the bodily practice, material world and the linguistic in influencing belief.

This paper began with an example of the most iconic example of the alienation between designer, user and subsequent users through technological distancing. A process of manufacturing belief through reducing human to human interaction to enable termination of life through remote warfare. I want to conclude this paper with descriptions of two attempts to facilitate a critical empathy with environment through participatory technology.

[g]host (2003) was commissioned for a new technology festival and developed a prototype analogue augmented reality where a user undertakes a walk through an urban regeneration zone, wearing a video headset in which all peripheral vision is removed to provide a framed focal viewpoint. During the journey, images reflecting an alternative journey are flashed into the framed vision, reflecting a different peripheral vision; that of homeless young people involved in the child sex industry. These young people were visible presences in the city to those who were looking, but out of focal vision for the mainstream of working, shopping participants in the city. The aims of the work were simply to stimulate a way of looking awry at the diversity of the city and to view differently. The work is not a stand alone feature, the walk is accompanied with me, and the user is engaging in a dialogue about their experience and also about the practicalities of negotiating public space whilst carrying a bodysuit of equipment that would now fit into a very small phone. The key aspect here is that there is a practice, the user is undertaking the same process as myself. The act of active engagement in the environment is the act of communion which enables the immersion to take place.

Erewash Mysteries (2015) was a creative consultation process for the Erewash Valley commissioned by a partnership of governmental and environmental organisations to produce an engagement methodology for a 10 year landscape development partnership to improve access, use and engagement in a post industrial landscape in the British Midlands. The project created a pervasive game based on the practice of geocaching, which is popular with families, where participants are given a set of co-ordinates and have to find a cache containing usually objects left previously to be exchanged and a notebook that records your find. The project used a digital version using a game engine and twitter to send participants a set of co-ordinates for a virtual cache which when found would invite the respondents to make poetic, text, drawn or photographic images responding to their feelings about the place they were in. When they had done so, a new set of co-ordinates were given and they would continue their journey through the landscape. Like [g]host, 12 years earlier, the main purpose of the work was to provide an incentive to view differently, to engage in dialogue both with family members and also through Twitter in response to the stimuli. The second was to create an archive of responses which would inform the development of the engagement methodology and also inform the next phase of the consultation which centred on a process of collaborative map making in partnership with local cultural organisations. Also like [g]host, the engagement is centred on an active practice of walking, playing, discovering, whilst also receiving a narrative stimulus. Unlike [g] host where the intent of the process was to create an empathy with specific people and contexts, and to reveal a particular social, political and economic structure, the Mysteries was aiming for an open engagement and empathy, the user would be assembling their own communion of people, narratives and artifacts. The point of connection was through the shared experience of the journey, a common landscape, and the fragments of their experience shared via Twitter which would provide a re-stimulus to me and also ripple out through social networking.

These processes are not offered here as examples of successful design interventions applying a coherent design methodology. They are examples of a thought process about a particular stage in an evolving and problematic pedagogy for placemaking which I am terming Communion with all the problems and contradictions that term requires. The wider process in which this stage sits and whether it is a staged process at all is still an open question.

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Intimacy in accessories

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ABSTRACT

This paper presents a study of three older women and their needs defining accessories, to understand the relationships between them and their favourite objects, and to clarify why they choose to wear them. The women were asked to showcase the accessories in their own home; thus the objects became enablers of conversations about personal life experiences of significance, which complemented the thrust of the study. This explorative study generated important information about why the women wear what they do. The home setting furthermore indulged a free way of anecdotal conversation and served the study with intimate details and rich stories. The findings showed that these accessories are objects with unique personal qualities and choice; this is obviously beyond their functional and material existence. These findings are of interest to the wearable health technology community as they discover possible factors to take into consideration when designing such for the older age group and traditionally designed within a biomedical model.

Keywords
accessories, older age group, wearable health technology

INTRODUCTION

The starting point for this research paper is to understand why older women wear what they do and what constitutes their reasons for choice. Investigating current trends in wearable health technology, wearability and fit to personal style, tend to prevail over technological aspects in the consumer's mind, as people perceive wearable devices as personal accessories (Mintel, 2015). As an accessory is a personal object, it relates to the wearer functionally, conceptually and aesthetically (Genova, 2013). Thus the categories of accessories extend far beyond the world of fashion (Sicard, 2005), to be concepts of ultimate extension of the body as objects, which help define our psychological, social and cultural contours (Trebitsch, 2005). Assuming that accessories are not solely linked to a definition of either jewellery or fashion, they are seen as representatives of the self - a visual adjective (Polhemus, 2005).

The aim of the paper is to identify accessories means and possibilities to be indicators for possible creation of wearable health devices. These types of devices are traditionally designed within a biomedical model (Bush, 2015) eliminating an understanding of personal values attached to the accessories. Other studies suggest that between 50% and 56% of wearable and assistive technologies are abandoned by the user and that 15% of these are never used after purchase (Hocking, 1999). This is critical, as remote healthcare monitoring in home environments are proposed as sustainable and cost-effective healthcare solutions, to future societal challenges (Jamal Deen, 2015). Indeed, social care or rehabilitation may be built around the use and functionality of these devices as a healthcare strategy (Dalke, 2016). As both the healthcare monitoring and accessories are worn close to the body, the accessory is an interesting object to investigate.

Exploring the nature of these types of accessories, accessory design students from the Design School Kolding in Denmark were briefed and then asked to go out and visit three women, aged 60-68 years, in the women's homes. The social interaction generated conversations about the women's favourite accessories: jewellery, a functional accessory and a clothing accessory, to clarify and enhance knowledge about why the women wear what they do. This objective will be investigated through related work to contextualise the accessory's narratives, followed by sections of the study approach, method and the empirical material. An analysis and discussion of the findings will be concluded in the end, followed by a short section on future product development and relevant work.

Accessory Narratives

With a focus on jewellery, Ahde-Deal's study of women and jewellery was found to be an inspiration in clarifying personal values of existing accessories. She states that wearing personal jewellery provokes experienced emotions – namely valued past times, and that the jewellery pieces are carriers of tangible memories (Ahde-Deal & Koskinen, 2010). Tanderup (2014) argues that jewellery design carries social and cultural values as a potential to fashion an identity for the wearer. In a practice-centred light, Wallace designs digital jewellery, combining contemporary jewellery and personal emotional significance (2007). She unfolds narratives of personal values, and reflects these back into design practice of new artefacts for among others, people with dementia (Wallace et al., 2013). Her findings point to personal preferences, beauty, enchantment and wellbeing, to indulge empathic design approaches.

Kettley, Walker and Townsend use archaeological and anthropology methods to investigate historical garment pieces (in this study understood as functional and clothing accessories), to understand the historical culture of garments care and construction, as possibilities of embedding technology to emphasise health and wellbeing, for vulnerable users (2015). Their project is interesting as it breaks the concept of garment up into relational parts that may support new dress practices with e.g. wearable health technology. Thus theorizing new knowledge of garment accessories fosters discussions of the physicality of future wearable health technology devices.

To examine the nature of accessories as an indicator for possible creation of wearable health technology, their current state of wearing accessories is of relevance. This is the case in Silina and Haddadi's study of 187 wearables at the market or at various stages of development and research, in which they conclude, "As wearables are entering the domain of fashion, it is not uncommon to see criticism of their unfashionable aesthetics and gadgetry that do not necessarily consider consumer preferences and a need to create desire for wearable objects" (2015). In their analysis they furthermore cover a lack of accessory-like wearables in the healthcare sector, to be disappointing as patients in their daily life use the devices (Ibid.).

The mentioned researchers show that in the realm of the accessory, perspectives as narratives, identity and empathy is found relevant, when designing future wearable health technology. It is therefore of relevance to understand such perspectives, as well as how to discover them.

An Empathic Design Approach

To identify empathy in design, several scholars have coined the term empathic design, in an effort to be better at understanding users, their situation, and feelings (Koskinen et al., 2003; Kouprie & Visser, 2009; Postma et al. 2012). Investigating how the relationship between the wearer and their accessories can function as drivers to discover possible factors to take into consideration when designing wearable health technology, "Empathic design is a research approach that is directed towards building creative understanding of users and their everyday life's for new product development" (Postma et al., 2012:60).

Initiating this deep engagement is a key to leveraging the potential for participation and co-learning (Wallace et al., 2013). This point led to the organisation of the study, in terms of the numbers of women, who participated. The fact that three persons agreed to take part in the study generated a close personal relationship between the lead author and the individual women. Due to the relative number of women, the level of managing several participants was limited, and made room for the study to fit into the daily schedules of the women. This fact encouraged the maintenance of giving individual attention to each participant, and thereby their successful engagement throughout the study.

The study draws on ethnographic methods developed by Klepp and Bjerck (2014). In what they call 'The Wardrobe Study' they have researched dress objects that people favour and consequently keep in their wardrobes for a long period of time. These approaches and methods connect social science with design research (in line with Koskinen et al. 2012), to generate the 'accessory showcase' on which to base the study's empirical material.

The Accessory Showcase

The first aim of the study was to establish contacts of relational character between the lead author, the accessory design students and the women. The connection between the lead author and the women were made at a local activity centre, where a short introduction to the project was given. After this, two phone calls secured the women agreement to a date and time. The women agreed to let the accessory design students visit them in the their own home, as a showcase for their accessories. A consent form explained that is was solely up to the women, what stories they wanted to tell. They all signed and agreed to audio recordings of the conversations and to having their photos taken. To help the accessory design students facilitate the conversations, the lead author had framed 10 questions as a guideline for them to lean on if the conversation suddenly needed input or a new direction. They were furthermore told to divide their team and give each other certain roles; one to focus on the conversation - keeping eye contact and being constantly present; another to give photo-document the accessories as well as taking photos of the women wearing them; and a third to keep focus on the audio recording of the dialogue. To capture the empirical material of the conversations and to facilitate a calm and comfortable atmosphere, the accessory design students got prepared for the dialogues to keep these in continuous flows.

Empirical Material

After the accessory design students visited the women, transcribed the material and wrote their reflections they handed over the empirical material - three audio recordings, three transcriptions in Danish of the audio recordings, several pictures of the women and their accessories, and 11 reports of the students' reflections. The written empirical material was afterwards translated into English by the lead author. Especially the readings of the student's reflections were of great impact when analysing the audio recordings. This finding is supported by the work of Larsen and Sproedt (2013) who argue that social interactions are paramount in understanding the exploration, and grasping of criteria

for innovation in practice – which can be argued also being the case when designing future wearable health technology.

The category of an accessory may take many recognisable forms and functions (e.g. hats, umbrellas, socks, scarfs etc.) thus the lead author divided the focus of the study into three categories of accessories: jewellery, functional accessory and clothing accessory. These categories should help both the accessory design students and the women to navigate in their selection of favourites, as well as differentiate the many types of accessories to unify an understanding of the varying meanings. The jewellery category is interesting because the women are wearing something that is not functional. The functional accessory category was guided with examples of objects that have a second layer added to them i.e. glasses, hearing aids etc. thus this category is objects that assist the wearer in some way. The category is chosen to reflect on functionality and not only aesthetic means of the objects. The last category is clothing accessories, chosen to include other tactile qualities to the exploration and to expand the meaning of material values. Below are the three women and their three favourite accessories:

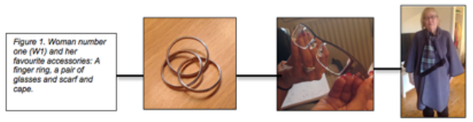


Figure 1. Woman number one (W1) and her favourite accessories: A finger ring, a pair of glasses and scarf and cape.



Figure 2: Woman number two (W2) and her collection of her favourite accessories: A necklace, a backpack and a jacket.



Figure 3: Woman number 3 (W3) and her favourite accessories: A bracelet, an iPhone and a skirt.

Analysis

The study's qualitative analysis is driven by points of astonishment (Brinkmann, 2014) and enchantment (Wallace et al. 2013), also pronounced as abductive reasoning, as it concerns a relationship between a situation and an inquiry (Brinkmann, 2014). In this case, the situation is the conversations with the women in their own homes. The inquiry is to understand why they choose what they wear. Listening through the audio recordings to analyse qualitative research material is similar to Revsbæk and Tanggaards method of 'analysing in the present' (2015). This method concerns paying attention to the way the women talk about their favourite accessories, as well as what they are saying, to convey diverse significance, as well as contribute to a sensitive understanding, tone of voice, laughter and tempo of speech. Some of the stories included either sad or happy characters, which led to different types of astonishment and enchantment during the conversations between the women and the accessory design students.

Capturing such empirical material makes the listener aware of incidents of astonishment and/or enchantment, used as navigation points for locating existential meanings for the listeners' individual and collective understanding (Brinkmann, 2014). This way of treating empirical material draws the attention to focus on the particularities of what the women say about their favourite accessories, for creating new insight that at the same time also recognises the similarities (Larsen and Sproedt, 2013). If the analysis was only given on behalf of the transcriptions of the interviews, to be black letters on white paper, the information would have been impersonal, without speech and sounds, to evoke sensory understanding of the women's heartfelt stories. Listening to the sounds of the recordings made the experience feel whole - to be 'tactile' when the lead author could hear the women or the accessory design students grasp the accessories or wear them, and 'visual' when listening to what happened in the room during the conversations. This was the case with coffee cups and tableware, as the women, as a friendly gesture served coffee for the accessory design students.

The transcribed material of the interviews, as well as the accessory design student's own reflections of the social interactions further supported the analysis. This insight gave the lead author the opportunity to not only listen to the words, but also to justify the experiences on behalf of the student's reflections. This supported the parts of the conversation that were chosen to be of relevance. Brinkmann (2014) refers to this analytical method as a way to stumble to allow us to be sensitive to the material. He states that there are many things to stumble upon in this world e.g. books, art and everyday episodes that usually are not simple given, as data, but, at certain times, they may cause us to stumble – and thereby become data (Ibid: 724). This approach led to the below structure for the empirical material to be localised in three categories: 'The Story behind', 'Embedded values' and 'Storage'. These categories explain the different accessories in vertical lines, and were chosen for their astonishing or enchanting character. Horizontally, the three categories of accessories frame the relationship between the women and their chosen objects.

Favourite Jewellery

Common for all the women was that they got emotional to different degrees while recollecting stories about their favourite jewellery. Stories were started without hesitation, even though the content was a sad experience when it happened. This was the case with W2, who started in a very eager tone, explaining about her necklace, but after a while shed a tear, because of her lost husband. The Individual stories are constructed of memories - memories the women share even with accessory design students who they had only known for a couple of hours. The chosen jewelleries were made of precious metals, as silver and gold. Though, W1 explains that her ring was not expensive, as this was bought at a market place. But what is of value to her is that it was her nephew that picked it for her, as a symbol of the tight relationship they have in their family. W1's finger ring therefore becomes a mediator to other people of her meaningful and valuable memories. This insight fostered the understanding of the objects emotional as well as material value.

Favourite Functional Accessory

Similarly, strong feelings are connected to the women's functional accessories. In W2's case her backpack is of high value to her, because the material characteristics, which is cork. She explains that the backpack makes her feel unique and special. She connects the choice of her favourite object, with a story about her latest trip to Portugal. Her grandson always wanted to go with her and her husband, but never made it, as W2's husband unfortunately died a couple of years ago. After this episode, W2 and her grandson decided to travel together to Portugal. The backpack therefore becomes a symbol of the shared experiences they had travelling together to Portugal, as well as representing W2 as a unique and special person. In W3's case an iPhone is her favourite functional accessory, as it easily connects her to her loved ones: her daughters and their children. What is of special interest is that W3 characterise her iPhone as an integrated part of her. She says that it is like a person to her, and that she does not keep it more than an arm length away from her and carries it wherever she goes.

Also W2 express that her functional accessory, a pair of glasses is an essential part of her, and W1 and W3 almost characterise their choices with bodily features. This gives the functional accessories unique qualities, beyond their functional and material existence.

Favourite Clothing Accessory

W1's scarf and cape are picked because of a story about her former work relations. W2 shares a story about a resident at her former workplace, who wove the fabric for her jacket. Wearing it reminds her of the time working at the nursing home. In both cases the accessories are related to W1 and W2's former job positions, and therefore become symbols of their identity at that time. W3's explanation of her favourite clothing accessory has also something to do with this, as she expresses that her skirt is a great part of her identity. She reasons that this is due to the many suits the skirt can be part of, festive or ordinary occasions and that it is classy in its look.

Another noteworthy point of the clothing accessories is the material in all three cases wool. W2's jacket is 20 years old and W3's skirt is 15 years old, and the women still use them a lot. Their common material gives a certain longevity quality to the objects, and W1, W2 and W3 mention this value to be the reason why the objects are chosen to be their favourite clothing accessories.

Student Reflections

One of the accessory design students reflected that since the interviews with W3 were undertaken in her own home it seemed to create a free way of conversation. It made it natural for the accessory design students to ask for personal details about her accessories. This experience established stories of intimate character. The women had all different cultural preferences, backgrounds and history, and yet there is a similar connection between them, the chosen accessories and their personal values. The accessories' embedded feelings are all linked to personal experiences of significance, and thereby related to the women's identity hence their image of themselves. A student meant that the reason why the women chose certain objects instead of others was the importance of the accessory's specific value attributions. For example, during the interview with W3 one student noticed that she touched her favourite jewellery a lot while talking about it, and lit up when recalling some of the memories. When discussing why the women chose these objects, one could assume that they are remembrances of both positive and negative experiences of significance for the wearer. Another student framed this in her reflection of the interview with W1 that her personal accessories tell stories about her and remind others of who she is. A third student claimed that the relation between W2 and her accessories was that they represent her – who she was, who she is and whom she wants to be.

Discussion

Handling this sensitive information needs empathic understanding pointing to the sensual and emotional aspects of the relationship between the women, their accessories and the accessory design students. This became clear, when several of the accessory design students concluded within their reflections, how they were taken by surprise at the openness and willing contributions from the women sharing their inner feelings, memories and personal stories.

The objective of this paper is to understand why the women wear what they do. A relevant note to this is the feeling the accessory design students had of the women's 'lived' life and their everyday life. In this situation, the accessories became enablers for the women to articulate experiences of significance for themselves. According to Ahde-Deal people are wearing particular objects in order to feel closeness to earlier experiences and to people related to those (2013). This was also the case with W2's jewellery, as her husband gave her the item at a time when her mother was very ill. W2 furthermore states that her children would find it very unnatural and strange if she stopped wearing it. The jewellery therefore allows W2 to keep her memories in a physical object to be close to her, as an articulator of the relationship to her lost ones, her mother and husband. With an ambition to incorporate these inner emotions as aesthetic preferences, engaging directly with the women in their own home appeared to be a unique situation. Another finding is the understanding of older women as social individuals. As referred to in the introduction, studies have shown that there is a high rate of rejection of wearable and assistive technologies. The ability to understand personal values can be an approach to deal with this situation in a different way.

Looking at the different categories, W1's finger ring, W2's backpack or W3's skirt is of significance. For example, W1 describes how her finger ring symbolises the strong relationship she has with her nephew and family. W2 explains how her backpack makes her feel unique and special. W3 were raised in a family without a mother, and therefore having a concerned father, who was led to believe that no one had understood the fact that his daughter did not have a mother. W3 explains that she thinks this is the reason why it is important for her to look well dressed. She expresses her feelings about her skirt that is classy and still looks beautiful even after 15 years of wear. It furthermore makes her be whoever she wants to be, with a note that no one wears nice clothes anymore – to mean, that W3 feels special wearing the skirt. The skirt's qualities become a symbol of her personal values and are therefore of importance to her. The finger ring, the backpack and the skirt might seem ordinary to some, but for the possessors they have character of relational, social and cultural status.

Informant/Accessory	Favourite jewellery	Favourite functional accessory	Favourite clothing accessory
(W1) 60 years of age	A silver finger ring	A pair of glasses	A woollen scarf and cape
Story behind	“I got the ring for my 40 year birth-day. My nephew picked it, while we where at a market place. He suggested his parents to buy it for me, as he said – This ring shows that there is strong connection in our family.”	“I have had glasses since I was seven, so for me I cant see a thing without them. I bought these at a time when I had a little money. I like that they are light and thin and have this special look. It should be you who wear the glasses. Not the glasses that wears you!”	“I got it as a present from my former Scottish colleagues, whom I worked with in London, when I was younger.”
Embedded values	“It is not made of expensive materials, and the design is very simple, but there are many great feelings and memories in it. I wear jewellery I think suits my clothes and mood.”	“I am very happy for these. They seem as a part of me, and it’s hardly that I recognise them. I feel comfortable when I wear them, and I like the small details and colours of the design.”	“I worked in London for some time. My scarf together with the cape represents memories from the good times I had there, the nice and fine quality it is made of and the persons I met. They are like family to me. Also it is nice to wear. When I wear it, it makes me happy, and it is a part of me as well of my life. That’s fun to think of.”
Storage	“I keep them here (at the sofa table) or in a drawer nearby my wardrobe.”	“I wear them all the time, and when not, when I sleep, I keep them very close to my bed.”	“I keep the scarf and cape in my wardrobe. Its to valuable to me, to have them hanging on the rack in my entree.”
(W2) 67 years of age	A gold necklace with a gold heart	A backpack made of cork	A jacket of wool fabric
Story behind	“I got the necklace in 1967, from my former boyfriend, now deceased husband. I was living abroad, and got it when visiting my home as my mother was becoming ill. A little later she died, and the necklace became related with the troubled time, where he was a great support. I have almost worn it ever since I got it.”	“ I bought the backpack on a trip to Portugal with my grandson. He always wanted to come with my husband and I, when we should out travelling Unfortunately we missed it, so my grandson and I took a trip together last autumn.”	“I worked at a nursing home for 18 years. And there are just some residents you remember more than others. One of them was a particular lady, who did not come along that well with the other residents. So to engage her in other activities we sat up a loom at a distant area for her to weave on. She made the fabric for this jacket. And the jacket is made especially for me.”
Embedded values	“It has to be around my neck and has become a part of me. It would be loosing a part of myself, loosing the necklace.”	“It makes me very unique. It is more fashionable than my regular backpacks. It’s also of high value to me, as it makes me think of our journey and the good memories from the trip. It is not a piece everyone wears. That does also mean something and the reason why I bought it. It gives me joy and identity – I like to posses things no one else have.”	“I love it. It is my colours and a pleasure every time I wear it. It is very valuable to me as it’s a piece no one else has. It is a nice feeling wearing it as it is made after my size. That’s very unique!”
Storage	“My children would see it as very strange if I stopped wearing it. I therefore wear it all the time.”	“I have worn many backpacks. This one I take good care of, and do not use that often. I keep it in my wardrobe.”	“It hangs together with my other precious items in my wardrobe.”
(W3) 68 years of age	A gold bracelet	An iPhone in a leather cover	A woollen skirt
Story behind	“I got the bracelet as a gift from my husband the morning after our wedding. The style of it runs in the family as my mother in law also got a bracelet in that design for her wedding. I wear it every day, even when I do my gymnastics.”	“At first I was sceptic. Then my daughters convinced me to buy it. I can quickly communicate via images from my two daughters and their children. I can always reach it, look up interesting ques-tions, find my way and follow the weather report. I simply can’t live without it!”	“I bought it on sale. It is a skirt made of 45% wool and 55% poly-ester. Event though I have had for 15 years it is still very suitable. It is classy without being boring. It’s festive without making too much noise.”
Embedded values	“I use my bracelet a lot and it has become a part of me. I am not even able to think of, what would happen if I lost it. It is a very emo-tional piece for me!”	“I carry it everywhere. It is so clever, and counts my steps. It is like a person to me and I am very happy about it!”	“It’s a simple thing, but a great part of my identity, as it suits almost every style of dressing. I have had it since the 90es and the material combination makes it still look beautiful. I can be whoever I want to be in it, and that’s a great quality for me. I like to dress up. People do not wear nice clothes anymore. The skirt is a part of my image. I wear it often and it’s suitable for every style!”
Storage	“I have a polish cloth in both my trolley and my drawer. I clean the jewellery I wear every day and keep them in small cotton bags. I hide them different places in my house from day to day. You can never be to secure these days!”	“I normally do not have the phone more than an arm length away from me. That is it’s natural place. When I am out, it’s in my purse. When I sleep, it’s at my bedside table.”	“It hangs in my wardrobe.”

Table 1: The analytical framework to define the women’s relationship to their accessories, and why they wear them.

In this case the shared stories and consent from the women, to work with the intimate material, the experience fosters personal engagement between the women, the accessory design students and the lead author. The observation of the accessory showcase gave both the authors astonishing and enchanting moments, due to the women's different emotional stories, as well as the accessory design student's personal reflections.

Possible impact on the design of future health wearables

Wallace advocates that empathic engagement between the makers, supports this point and user, combined with a strong relationship, is fundamental for constructing technologies of deep personal significance (Wright et al. 2008). Her point, as well as this study's findings addresses important prospects for design projects and methodologies of design and manufacture of wearable health technology. One idea could be to let designers engage with the user group in their social settings to kick-start a design project. This will give insight into which values are important, when engaging with other people socially, and opens up for reflection of how to bring a language of universality into the design process. In this study, next step could be to engage with the same three women in other types of social settings than their home e.g. in the local activity centre.

Silina and Haddadi claim that it is disappointing to see that the healthcare market sector is not benefitting from accessories as a form factor for the devices that are used by patients in their everyday life (2015). With the scenario of future care, the wearable health technology market should employ designers with understanding of empathic as well as an accessory way of thinking. In fact, all design activity surrounding sensitive or vulnerable people especially in the healthcare field needs to be fully understood (Dalke, 2011). Observation of interaction with products is key here rather than designer prescribed ideas and solutions. According to several scholars' multidisciplinary collaborations is a necessity when designing future wearable health technology (Toeters et al., 2013; Silina and Haddadi, 2015; Kettley et al., 2015). For example, Kettley et al. (2015) believe that a participatory design approach, exploring wearable technology, vulnerable user groups, and historical language of dress, combine new design perspectives for wearables. The authors of this paper suggest that both older adults and accessory designers should be invited to join such collaborations.

This study indicates that accessories that are used have a personal significance for the wearer – a fact that might impact the design of future wearable health technology, as current devices are often abandoned. Instead, designers of future wearable health technology should be emphasizing the accessory's deep relational, social and cultural capacities. To engage in such projects, the designers' empathic understanding of the user, as well as understanding sensibilities in material knowledge and practice is key.

It is therefore found necessary to understand the relational, social and cultural aspects of the accessory's role, to empathise designing for that person, to uncover such important life factors.

Conclusion

The accessories, as well as the stories, gave the conversations astonishing and enchanting moments, which fed the experience with rich material. These incidents characterise the nature of the accessory to be an object that:

- Carries the wearers identity
- Is embedded with personal and emotional stories
- Is a symbol of experiences of significance to the wearer
- Tells stories about the wearer, and reminds others of whom the wearer is
- Can be seen as an integrated part of the wearer
- Has bodily qualities
- Is of emotional, memorable and material value to the wearer

These findings discover that the accessory is an object that not only defines the wearers psychological, social and cultural contours – it is also a relational object, due to the fact that we are social creatures. The showcased accessories and their embedded feelings are all linked to personal experiences, and thereby related to the women's identity hence their image of themselves. This clarify that the accessory is a representation of the women, who they were, who they are and whom they want to be.

This insight gives the accessory unique qualities beyond its functional and material existence. Such factors are therefore suggested to take into consideration when designing wearable health technology, for the home setting in general, and older women in particular.

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Open dementia project: Empathic tools between magic and everyday life

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ABSTRACT

In Chinese society like in many cultures, persons with dementia suffer some level of stigmatisation. For this reason a dementia research/care centre in Hong Kong (China) initiated the design of the “dementia experience tool”. Its main goal is to create public understanding through inviting the general public to experience dementia. The dementia research/care centre commissioned a social design research lab team (two of the authors are part of this) to create the tool, starting from designing empathic tools. One of the main challenges to design this tool was to find a way to empathise with a complicated condition such as dementia, which is an umbrella term for a series of symptoms, as traditional empathic tools mostly focus on simulation of a specific physical or mental impairment. Additionally, we explored the possibility of using the concept of magic. Magic can be defined as “mysterious tracks: a quality that makes something seem removed from everyday life, especially in a way that gives delight” [1].

“What if everyday objects become demented?” This was the speculative design statement to kick-start the creation of a set of empathic tools to experience dementia. The end result can be divided in three parts. The first part is the development of the Brain-man: a character/icon to present the project. Part II is about the “Demented City”, an infographic mapping out 11 common symptoms of dementia in such a way that they were not inanimate but set in a context. These symptoms were transferred into 11 sets of games, the “Demented Objects”. Part III is a set of objects mimicking existing everyday situations like taking an elevator or taking pills but they all hold a twist, a bit of magic through which the experience of having dementia is experienced.

Keywords

empathic tools, design, dementia

INTRODUCTION - WHAT IS DEMENTIA?

Dementia is an umbrella term used to describe a variety of psychiatric and cognitive symptoms. Psychiatric symptoms may include personality changes, depression, hallucinations and delusions. On a cognitive level persons with dementia (from mild to moderate) mostly suffer from a deterioration of memory (such as amnesia), difficulties in language and communication (aphasia), the inability to perform purposeful movements (apraxia) and/or orientation in time and place (agnosia) [2]. Furthermore, the large majority of the persons with dementia belong to the group of older persons who might need to deal with the physical ailments like impaired eyesight, hearing or physical coordination [3], [4]. The way dementia affects daily life is different for each person.

Society’s view on dementia is heavily determined by two interrelated elements, the vision on the self and society’s vision on the condition the self is in. Two dominant visions on the self in relation to dementia exist. The Locke-Parfit-vision (LP) distinguishes the physical self (‘man’) from consciousness, self-reflection and reason, which makes up the ‘person’. Without the ‘person’, there is only a physical body, a ‘man’. The Locke-Parfit-vision also foregrounds connectedness and continuity: the ability to link the ‘person’ of today to the ‘person’ of the past. Without a memory of causes and effect that created the person, there is no self. Contrary to this, the notion of the Situated-Embodied Agent (SEA), sees the person as “a human agent, a being of this embodied kind, who acts and interacts in a cultural and historical context in which he or she is embedded” [5]. Both visions on the self have consequences on the vision on Persons with Dementia (PwD). The LP vision regards a person with dementia – with a distorted consciousness, frequent memory failures- less as a ‘person’ and more as a ‘man’, a body without mind. The SEA-vision provides for a vision in which a person with dementia in the uniqueness of her own existence and in relation to her day-to-day context can be involved as an acting participant of society. The different vision of the self will also define the concept of normality. In the Locke-Parfit vision, the disintegration of body and mind; of the now and the present will define the person with dementia as outside of normality. The vision of the person as a situated embodied agent however will see the person with dementia as a changed, but normal person.

The vision on dementia is also highly depending on the value that is given to the self. Normal and pathological ageing (like with dementia) tend to overlap and the demarcation line between both is set arbitrarily or as part of a social construction to create order from the disorder [6]. Societies in the west which value individualism, autonomy and agency tend to view the person with dementia as ‘not normal’ or ‘outside of society’, hence the focus on exclusion and segregation, taking the person with dementia to residential care facilities and the early stripping of agency of the person with dementia. This perspective is heavily linked to the carer or person(s) surrounding the person with dementia. When a mother with dementia becomes dependent on the support of her son or partner, the agency, individualism and autonomy of that family member is fundamentally challenged. When we in society are confronted with “the naked truth of the shattered lives” [7], segregation, exclusion and dehumanization is just around the corner. This relates to the social model of disability, which states that a person is disabled not through the condition, disease or disability but through society’s response.

The above suggests that the way dementia is thus perceived, comes from the way we perceive the self and how our society responds to the changed self. The created toolkit must thus take into account this vision on dementia and respond to it. One way in which the perception of persons with dementia is prevalent is in the use of language. In the next section we will go deeper into the way Chinese culture perceives dementia.

Language as a Social Construction

Before setting a tone for everyday behaviour, we try to understand the social discourse of a disease, which we believe could both represent and construct the social condition of a disease or a condition. Language is an essential part of this discourse, and as a matter of fact, the translation and naming of dementia in Chinese Societies do take a specific trajectory through the years.

The naming of the condition of dementia is highly influenced by the Chinese language. Korean and Japanese languages rely on many Chinese characters and many Asian medical names were adapted from those used centuries ago by Chinese practitioners who called illnesses after symptoms, instead of the causes. But this habitual practice more often than not results in quite some pejorative terms, which is especially the case for dementia. This situation is no different in most Asian countries. It is however to be noted that after 2000 many countries in the area have made different efforts to rename the condition.

The general name Chinese has been using to label the dementia-condition is 老人痴呆症 or more officially 老年痴呆症, for which the first part 老年 means “ageing”, and the second part 痴呆 means “insane and idiotic” or “dull and stupid”. The Chinese translation of 老人痴呆症 has a strong influence in the naming of dementia in many East Asian countries. This term is based on the medical term which is today still embraced by quite a number of members from the medial disciplines. The term is obviously a stigmatisation as it reduces the person with dementia to the condition they are in and links a negative qualification to this condition (dull, idiotic, insane). In this way, this term links back to the Locke-Parfit vision where the person is seen as disconnected from their past and present; as body and not man. Next to this, the term also works on a different level as the term links dementia to the normal or natural way of ageing. This link makes the public perceive dementia as part of the natural ageing process, instead of a condition that needs special resources and attention from the whole society. China later on tried to introduce the new name as 痴呆綜合症 (“disease of being idiotic and dull syndrome”), which removed the part of ageing but still sticks to the symptoms. The term that means syndrome instead of disease is also adopted for this new name.

Taiwan started very early in East Asia for pushing for a less negative term for dementia in their own language. Back in 1998, Taiwanese has already been pushing for a new translation of 失智症, which could be translated to “loss of wisdom/intelligence”, which avoid the old tracks of symptoms or behaviours to the effect of the disease. This paved the way for a new way of thinking for a different translation of dementia. This new translation is then a widely accepted way of naming as it is in line with the clinical term, as the USA started to use “major neurocognitive disorder” for dementia in recent years [8].

Hong Kong has been using the term 老人痴呆症 (translated as “Aged idiotic disorder”) similar to the term used in the mainland China. It was not until in October 2010 a new term was introduced after an open call asking the public to rename the old term. The campaign, organised by the Jockey Club Centre for Positive Ageing (JCCPA), wanted to avoid any possible prejudice because of the negative connotation of the original name. The chosen name by popular vote is 腦退化症 (translated as “brain degenerative disorder”). This way of naming tries to highlight the cause of the disease. This could urge the public to perceive the person with dementia as having a specific medical condition instead of someone merely acting “insane”. However, little time after the launch of this new term controversy arose. The Hong Kong Psychogeriatric Association pointed out that not all the cases of diagnosed dementia in Hong Kong are caused by brain degeneration, with one third of them are induced by stroke. Despite this controversy, the new term is now widely adopted in Hong Kong at least for the mass media.

It is thus clear that still a large portion of the people of Hong Kong define dementia and the persons with dementia as ‘strange’, ‘bizarre’, outside of the normal, something that is not a person, but more of a body acting strange (a man, not a person; a static disintegrated someone, not a historic and culturally embedded person). The interplay between what is normal and what is abnormal is what is at stake when working with persons with dementia. The symptoms that come about when being confronted with dementia is what lead normal or ‘neuro-typical’ persons to respond with distance, anxiety or reluctance to get in contact with the person with dementia. The conceptualisation and design of the toolkit discussed in this paper had as a goal to reduce this type of negativism and enhance the understanding for dementia, letting them be perceived as a person and not as a dehumanised body.

Open Demenia Project: Giving Insight in How Dementia is Experience

With the risk of exaggeration, the general perception of dementia, especially with the older population in Hong Kong is considered as part of the natural ageing process, and, thus, receiving little special attention. Additionally, dementia is being ‘kept’ outside of public life in Chinese society. Moreover, dementia suffers from some level of stigmatisation, being linked to mental illness and therefore not

openly discussed within the close group of family and friends. This is the rationale of developing a dementia awareness toolkit initiated by a dementia research/care centre in Hong Kong.

The main goal of the toolkit is to create public understanding through inviting those not familiar with dementia to experience dementia directly. This is why we entitled the project: Open Dementia Project to encourage general public to have an open mind to this stigmatising disease or disability.

Design Methodology 1: Empathising Dementia

The toolkit discussed in this paper was partly set up by a non-profit organisation of researching dementia and running a care home for dementia patients that has been established in 2000. Its main goal is to promote dementia care and the knowledge of dementia in general. Next to managing a centre for day care and residential care for persons with dementia, the centre also focusses on the training of formal and informal caregivers and the education of the larger public. For these last two objectives the centre reached out to two of the authors to see where design can aid in these goals. The main project question was thus: how can design aid in (1) giving an insight in what dementia is; (2) helping a general audience understand that the prevalence of dementia is quite high and that persons with dementia are thus an integral part of our society and, in providing this insights, the toolkit hopes to raise empathy for the persons with dementia.

In dementia care, the now ruling paradigm is Kitwood's person-centered care [9]. Person-centered care starts from the idea of "seeing the person with dementia as an individual with rights and a need for sensitive interaction" [10] both in the literal taking care of the person with dementia as well as in the view of the person with dementia in society or the way a person with dementia is approached in day-to-day interaction. Though person-centred care can mean different things, it can be summarised by the VIPS acronym: (V)aluing people with dementia and those who care for them; Treating people as (I)ndividuals; Looking at the world from the perspective of the (P)erson with dementia; A positive (S)ocial environment in which the person living with dementia can experience relative wellbeing.

Empathy is one of the key components of person-centered care. To try to gain insight in the way a person with dementia perceives the world is thus important, as it is the stepping-stone to gain empathy. As the empathy-altruism hypothesis [11] states, feelings of empathy towards another human being will evoke altruistic motivations and thus empathy seems to be key in better understanding and acting upon being confronted with persons with dementia. Stein defines empathy as the experienced emotions of joy, distress or irritation of the other, "though I lack his or her actual perception, I can understand what the person is perceiving as I can relate it back to similar feelings" [12].

The way a person with dementia perceives life is something that is made known through diaries autoethnographic accounts or graphic novels of personal experiences living with dementia [13] [14] [15] [16], or, caring for and living together with a person with dementia. Movies such as Still Alice or the French movie Amour try to tell the story of life with dementia opening up this fragile topic for a mainstream audience. Although these provide an insightful look into the world of a person with dementia, it still stays hard to fully grasp life living with dementia. Direct contact and spending time with the person with dementia is one effective, but time-consuming form of gaining empathy [17].

The Open Dementia Project intended to find a way to –in a format that can easily be reproduced and shared- have participants better understand the world of a person with dementia hoping that this would lead to a greater form of empathy. The end-goal then is to have participants change their response when being confronted in a day-to-day interaction with persons with dementia. Based on the abovementioned care paradigm and the notion of empathy, the design team chose to conceptualise the toolkit not through the experience of media (such as film or a graphic novel), but in trying to engage the participants more actively through 'acting out' [18] elements of dementia and stimulate the evocation of "resonance" feelings [19] (feeling as if you have dementia). For this reason the everyday life in the city (and how it affected persons with dementia) was chosen. It supports the participants of the workshop to better identify and understand how their life could be affected. Next to this everyday setting, performance is used as a way to act out elements of dementia.

Additionally, traditional empathic tools focus on stimulation of specific physical or mental impairment. A good example of this is Ford's Third Age Suit that wants you to experience the reduced mobility or impaired eyesight of a 100-year-old person. Simulating a cognitive condition such as dementia is however more complex. Moreover, these empathic tools that focus on physical and bodily experiences may limit the possibility of gaining empathy as they focus solely on physical and bodily experiences and disregard the cognitive, mental or social consequences of a certain condition and thus does not offer changing perspective beyond the physical. Hence, the specific challenge of replicating the cognitive condition when being confronted with dementia poses both a challenge and also a possibility.

Design Methodology 2: Disrupting the Everyday Through Magic

To overcome the challenge of experiencing to have dementia, we used the notion of magic. Magic can be defined as "mysterious tracks: a quality that makes something seem removed from everyday life, especially in a way that gives delight" [1]. Moreover, magic is defined by cultural anthropologist Kottak as the "use of supernatural techniques to accomplish specific aims" [20]. Keesing and Strathern's definition of magic focuses on how magic "represents human attempts to manipulate chains of cause and effect between events that to us are unrelated, in ways that to us are irrational…" [21]. The first definition takes into account that which goes beyond the everyday life. From the last two definitions we took along the notions 'supernatural' and 'irrational'. While the latter can be seen as a negative term, both focus on that what is different than normal, cannot always be explained logically or goes beyond what is natural to do. Combining these three definitions we see a tension between the everyday and the supernatural, the rational and irrational, the normal and the not normal. The design team used these frictions as a starting point in their design trying not only to focus on making something highly stylistic, but an artifact that would play with all these tensions, being both everyday and out-of-ordinary, rational and irrational.

In what follows we will go deeper into the actual design phases.

Open Dementia Tool 1: A Character with Dementia

The design team realised at an early stage that in order to connect with the public about dementia, a 'gripping' story should be told and to tell this story, it would be done better through a character. A character dealing with dementia was created in order to ameliorate identification.

With the cultural context of relating dementia with the ageing population in Hong Kong, the research team started with a simple baseline of a character that does not have any indication of age. After a further discussion, the team came to a conclusion that the character should not have any suggestion of belonging to any social category, or suggest age, gender or even race. The team found it to be best if the final character is a non-human being, however having a humanoid physique that can perform daily tasks and have the facial expression to show the psychological states of the character. The character would also highlight dementia as a medical condition but not a natural ageing process, and so in another words not the natural characteristics of older people. With reference to the name of dementia in Chinese, the team chose to highlight the brain as the main standout point of the character. The team then discussed with an illustrator who created the blue character of 腦人 (Brain-man) Figure 1. The illustrator added in the eraser over the brain to represents the degeneration of the organ.



Figure 1. Development of the Brain-Man. Illustration by Don Mak

Open Dementia Tool 2: The Demented City Map

As a start of the project the design team together with the "dementia experience" training programme managers from the centre mapped out the several symptoms persons with dementia can be confronted with. The different symptoms were visualised in a city context showing Brain-man-figures. The everyday activities (like withdrawing money from an ATM, cooking or going to the bathroom) that are performed are however distorted by the symptoms the Brain-men with dementia are dealing with. The other inhabitants of the city are portrayed as responding with misunderstanding, irritation or anger upon being confronted with the persons with dementia.

At the beginning the design team has considered several different logics to map the symptoms. One of the options was to map the symptoms according to different parts of the brain (which symptom is related to which part of the brain). This approach is more explanatory, illustrating some basic knowledge about the causes of different symptoms of dementia. The game changer came when the team tried to approach the way of visualisation by asking a different question, "what if the whole city has dementia?".

According to SCOPE, UK's leading disability charity, "the social model of disability says that disability is caused by the way society is organised, rather (than) by a person's impairment or difference." [22] This leads to the final discussion of visualisation dementia in different levels: the domestic level, the community level and also finally at the city level.



Figure 2. Structure of the dementia map



Figure 3. Open Dementia Map

With the help of the information from the dementia centre, the team started to draw sketches of different scenarios that a person with dementia would encounter on a day-to-day basis, and then according to the loci of different scenarios, grouped them into home, community and city respectively. The final map is an illustrated map that shows a modern city with the character Brain-man encountering different 'problems' from different layers of city lives: from home to city (Figure 2). As Brain-man now forms the main population of the "Open Dementia City", the map also serves to show that being perceived as abnormal, irrational or out-of-the-ordinary are not intrinsic to the symptoms or condition of dementia, but are shaped through the environment, i.e. the others in the city (Figure 3). This echoes the situated embodied agent (SEA) vision mentioned above.

The Objects with Dementia

The objects in the toolkit are named the “Demented Objects” and they mimic existing everyday situations (like taking an elevator) or artifacts which we are confronted with on a daily basis (like a signage plaque or a pillbox). All these objects are made by redesigning everyday objects that actually let the participants live through the experience of being a demented person. The aim is to bring empathy to the participants.

There is however a “twist” or a bit of magic involved in the use of the objects or the performance of the everyday situations: while following the instructions for pill sorting, the seemingly normal pill box seems to have its own logic (mixing up days) and its clear cut instructions turn out to be illogical. For example, in the tool focusing on memory loss, the participant of the workshop receives an instruction and is asked to write down a complex series of events in the agenda. In the course of doing this, one has to go back reviewing earlier dates only to find out that they have disappeared from your agenda. By using “magical ink” that disappears after a 5-minute period, the tool tries to mimic the feeling of loss and bewilderment a person with dementia experiences when being confronted with failed short-term memory.

The “Demented Objects” consists of 11 sets of objects (Figure 4), divided into “mild stage” and “moderate stage” packs. Each of the “Demented Objects” corresponds to a specific symptom of dementia, which all magically will dement the participant temporarily. Table 1 shows how the 11 Demented Objects can make people to experience being demented.

Performance as a Tool

The act of performance is important for “the Demented Objects”. The objects or everyday situation are not merely used, but are performed following instructions (a script) accompanying the tools and having some participants in the role of the person with dementia while others are the spectators responding to the person with dementia’s behavior. Performance is an ideal tool as the participants through their performance jump into a magical world, and, just like being separated by the fourth wall in traditional theatre their perspectives of the world are different from the spectators.



Figure 4. Dementia Experience tools – Demented objects

Through the performance, the participant not just bodily feels the struggle of the everyday tasks for a person with dementia, they also feel the frustration of being misunderstood, and the inability to communicate. For example, participants are asking to try on the “Never-Buttoned-Shirt” (Figure 5) or calculate with the “Tricky Calculator” (Figure 6). The participants would be performing something that s/he is confident in doing “right” (following the cue card). And after all, the struggle of dementia is not only physical, or physiological, but also social and interpersonal, which is utmost important for the people around demented person to be aware of.

Psychiatrist Jacob Levy Moreno used dramatisation of everyday events in his therapy sessions [23]. He used props, a stage and a real-life scenario for his therapist groups to act. Participants are asked to discuss and evaluate what has happened and how they responded. In the same line of traditional pre-20th century theatre and the goals of Moreno, we too ask our participants to actively seek discussion between those performing and those watching. The goal of this theatrical performance, like the drama used by Moreno, is to reflect on past actions and in this way gain insights on how to respond in future situations.

Binder & Foverskov [24] have already related design to performance as well as to the imaginary world and the life of everyday. Developing on the theory of symbolic interactionism and Victor Turner, Binder & Forversfov argue that “…design as performance is precisely to connect the multi-facetted role-playing of the everyday with the playful exploration of the “what-if” of the theatre [24].” The “Demented Objects” tap on this relation between design tools and theatre, and at the same time the imaginary (magical) world and the everyday.





Figure 5 Never-buttoned shirt Figure 6 Tricky Circulator

STAGE	ACTIVITY NAME	CORRESPONDING SYMPTOMS	ACTIVITY
Mild Stage	日期與活動 (Date and Activities)	Memory loss	At this action, one of the participants will be asked to mark down several appointments with the provided notebook and ball pen. But the ink actually would disappear in a few seconds. Which make the participant unable to repeat to the other participants while asked later in the action.
	迷失的眼鏡 (Glasses of Lost)	Decline of orientation	The participant will be asked to put on a pair of disorienting glasses, for which s/he could only see the side instead of the front while wearing them. The participant will then have to find different cards which a scattered in the room by the other participants.
	齊齊計數	Decline of problem solving skill	The participants will be asked to do some simple calculation, but they are provided with a rigged calculator, which makes them impossible to perform the task.
	準時食啱藥 (Take the Right Pills)	Decline of judgment	The participant is asked to sort the pills into a typical multi-slot pill box, with instruction of super tedious and confusing instruction.
	出門帶啲乜 (Pick Me Up before You Go Go)	Visual and spatial problem	The participant will be asked to wear a pair of special glasses that block part of his/her vision through reflection, and then being asked to pick something essential for going out, and at last have to circle out the floor at a simulate board of a lift.
Moderate Stage:	執唔執到豆? (Sort the Beans)	Decline of motor planning	The participants will be asked to wear gloves to reduce the sensitivity of his/her fingertips, and to pick and sort different beans into different bowls.
	做到啲乜 (Follow the Instruction)	Difficulty in following instruction	One of the participants will be the “instructor” and another participant will be asked to stand near the instructor and to act out some action and gestures as shown in the cue cards by the instructor. Yet the cue cards are actually designed to show different information while viewing from different distances. Hence the spectators will find it strange for the participant always performing something different from what the cue cards suggest.
	有口難言 (Thou Shalt Not Utter Its Name)	Difficulty in communicating	The participant will be asked to not to talk in this action, but have to find three persons that understand the condition s/he is having, which is constipation
	製作腦人 (Making the Brain-man)	Misusing objects	The participants will be asked to use the glue-pen provided to make a paper model of the Brain-man. But for the four glue-pens provided, only one of them is really glue, the other are stuffed with lipstick or candles wax instead.
	著襯衫 (Wearing it Right)	Decrease in coordination and motor function	The participant will be asked to wear and button up a long sleeve shirt, but again the shirt is altered to have not matching buttons and flipped collar, making it almost impossible to wear it properly.
	數銀仔 (The Counting Game)	Decrease ability to focus or concentrate	The participant will be asked to count and sort numerous coins and put them into different bowls, while at the same time another participant will be asked to distract and confusing the participant who is counting by murmuring other numbers into his/her ear.

Table 1: The 11 games with the Demented Object

Conclusion

“What if everyday objects become demented?” This was the design statement for developing this set of empathic tools. The techniques of making the everyday strange through the use of magic are very diverse and in their playful, aesthetic, dramatic, or frictional nature help to see things in an unfamiliar, new or other perspective. The confrontation with the toolkit tries to engage and disrupt the participant’s vision on normality. The elements of the toolkit work as disruptive as their seemingly “normal” appearance will lure you into an experience of performance that will feel strange or ‘out of the normal’ like involving in magic tracks. They are engaging, as they appear to be normal and in this way help you to connect and reflect or mirror your situation to that of the other, the person with dementia, experiencing this ‘abnormality’ on a day-to-day basis. Through this disruption and engagement the tools created try to invite an empathic response. In doing so it tries to help the neuro-typical participant to better understand the seemingly abnormal, irrational, out-of-the-ordinary world of the person with dementia and to not perceive them as “insane and idiotic”, “dull and stupid” or bodies without a mind, but as persons who happen to have dementia.

Future challenges for the toolkit can be identified at two levels: the kit is a tool that can be applied within the context of a workshop (with one or more workshop leaders, learning goals and a defined amount of time). The question stays whether this toolkit can be transformed in a reflective tool to be used on a daily basis. Can the aesthetics and material form of the tool be adapted to be used by—for example—a police officer strolling around the city when being confronted with a person with dementia? In other words, can a kit be created that can serve less as a one-off workshop tool, but more as a reflection-in-action and reflection-on-action tool, helping, to stick with the example of the police officer, to act correctly? Another challenge lies in the content of the toolkit. The toolkit can be perceived as too negative, focusing mostly on symptoms, stressing the problems related to dementia and thus giving a negative outlook on the person with dementia. However, family members as well as persons with dementia indicate that despite the condition of dementia they can and will experience joy or love and can have meaningful, humouristic and many different forms of positive interactions in daily life. Neglecting these positive elements of life and only focusing on the negative challenges, might hold a risk in again de-humanising the person with dementia. A next toolkit could give a more nuanced view on living with dementia.

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Big picture and small picture; learning to design for the user in context

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ABSTRACT

Designing products for under-served communities in developing countries requires empathy for the user and significant contextual understanding. Hence a socially responsible design strategy seeks to address these issues by applying Design Methods Tools derived from Human Centered Design, Design for Environment, and Social Impact approaches. To ascertain the influence of a suite of specific Design Methods Tools sign, project outcomes from several iterations of Socially Responsible Design studio curricula were reviewed. Projects were rated using categorical variables derived from the principles of Appropriate Technology, thus providing an indicator of the relationship between user, product and context. Findings indicated that a modified version of Stanford University's Ideate and Prototype Design Methods Tool was significant in generating empathy for the user (and maker) in context. The Tool's original, adapted, and future versions are discussed, including speculation around the challenges and opportunities for customisation and application. Significantly, this study offers designers, educators and students one way to understand 'how to' design for users very different from themselves and highlights the need for holistic design solutions that go beyond the physical product. Empathy for the user in context is essential to the design of successful products for developing countries but also equally relevant to any design situation.

Keywords

socially responsible design, empathic design, ideate and prototype design methods tool

INTRODUCTION

There is growing demand for product designers to address the complicated issues of social and environmental sustainability, particularly in designing products for under-served communities in developing countries. Teaching product designers to be sensitive about the needs of people and the potential social, cultural, and environmental impact of their work is becoming increasingly important (UNESCO, 2010, Beder, 1999, Conlon, 2008, DeVere et al., 2009, Brodeur, 2013). Undertaking projects with, and for, communities external to the university is one way to highlight the important objective of designing contextually for different users (Brodeur, 2013). Designing products with positive social impact for specific settings requires the designer to have empathy for the user, as empathic design approaches 'lead to product concepts fitting user groups' needs and preferences' (van Rijn et al., 2011). However, product designers (and engineers) often focus only on technical solutions, implying there is a need for designers to understand different users and to consider them from multiple viewpoints as the foundation for designing socially responsible, contextualised solutions.

Appropriate Technology describes how technology 'fits' with a particular user, community, place, and culture, specifically for developing countries (Murphy et al., 2009, Sianipar et al., 2013). Murphy et al's principles of Appropriate Technology describe a framework for defining the suitability of products for different users from multiple perspectives. During the study in this paper, the author developed three categories of Appropriate Technology criteria (derived from Murphy et al's framework and principles) to describe the fit of product with the user in context in three broad categories; Technically appropriate, Environmentally appropriate and Socio-Culturally appropriate. Subsequently this criterion was used to rate Product Design Engineering students' Socially Responsible Design projects to determine if the 'fit' between user, product and context changed as the result of the inclusion of Design Methods Tools as learning activities.

Literature Review

Victor Papenek is often cited as one of the first design researchers questioning the market driven model of industrial/product design practice in proposing product designers instead focus attention on solving problems for other under-served target users and markets such as design for the disabled (Davey et al., 2005, Papanek, 1985). Contemporary theorists now reframe the objective of Socially Responsible Design or Design for a Purpose, as design with the objective of creating social change from a mixture of market driven and social design goals (Margolin and Margolin, 2002, Sanders and Stappers, 2008, Davey et al., 2005). Many conceptions of Socially Responsible Design privilege the importance of local scale solutions, involving the development of localised products for communities (Cipolla and Bartholo, 2012, Morelli, 2007). Therefore, a working definition of Socially Responsible Design is the design of solutions focusing on the local context, being good for the local environment, local people, and with potential for positive social impact. But how can the fit between user, product, and context be evaluated?

Using or introducing technologies to developing countries is commonly referred to as Appropriate Technology, which is defined as the 'application of scientific knowledge for practical purposes, yet suitable for a particular person, condition occasion or place' (Murphy et al., 2009). Evolving as a philosophy, Appropriate Technology refers to problem solving tools and techniques including the less tangible characteristics of knowledge transfer, social, cultural, and gender issues (Sianipar et al., 2013). A summary of the author's interpretation of Murphy et al's Appropriate Technology is technology that; meets the basic needs of users, is sound technology, is a flexible technology, meets local capabilities by utilizing local materials and resources, is affordable, is sustainable, encourages local participation, is socially and culturally appropriate, takes into consideration gender differences and provides for technology transfer mechanisms.

Empathy is defined as the ability to understand and share the feelings of another (Oxford Dictionary, 2016). Product designers use Human Centered Design techniques to understand users and engage in empathic design (Kouprie and Visser, 2009), in turn 'to get closer to the lives and experiences of users in order to increase the potential that the product or service addresses the users' needs' (van Rijn et al., 2011). An empathic approach to design means walking the shoes of the user, seeing the problem and the solution from their perspective. Thus using empathic design approaches enables designers to understand users' technical, environmental and socio-cultural contexts, allowing designers to develop solutions that respond to Appropriate Technology principles. Built from a long history in Human Centered Design, empathic design approaches transform everyday user experiences into inspiration for design outcomes (Mattelmaki et al., 2013, Buchenau and Suri, 2000). Empathic design tools, and techniques include observing users, low and hi fidelity prototypes, and role playing, thus moving the designer closer towards users' experiences (Steen, 2011). Importantly, the sensorial aspects of empathic methods drive the design process, emphasising how the designer empathises with the user through their own experience of interacting with the product/prototype.

Design Methods Tools guide and structure the way designers work within a design process. In developing curricula to teach Socially Responsible Design, Design Methods Tools were drawn from the Human Centered Design, Design for Environment and Social Impact approaches (Bissett Johnson, 2014). Using Design Methods Tools in an educational setting requires adaption of the tools to become learning activities, additionally allowing for the documentation of the process and results as assessable outcomes (Dinham, 1991). Importantly, the learning activities provide a scaffold for the learning and design process, moving the project from a general understanding of the problem, through the generation of new solutions towards an explicit solution, additionally externalising thinking, and communicating the design outcome (Green and Bonollo, 2002). Thus specific Design Methods Tools, adapted to become learning activities, arguably can stimulate the designer's empathy with the user in context by exposing many of the different contextual influences on product outcomes. It follows that product outcomes generated through the use of these Design Methods Tools will rate highly against Appropriate Technology criteria.

Case Study – A Review of Socially Responsible Design Student Projects Using an Appropriate Technology Framework

Product Design Engineering is a 4-year undergraduate degree blended from the disciplines of Industrial Design and Mechanical Engineering at Swinburne University, Australia. The author taught a third year design studio unit with the objective of teaching Socially Responsible Design. Various external organisations partnered with the university each year (2008 – 2014), providing detailed briefs for these studios and access to fieldwork resources. All studios had the objective of the design of products to enhance the lives of people in under-served communities. For each student cohort there were a series of common 'user groups' identified from fieldwork. However due to time and ethical constraints, students used the composite character Design Methods Tool (Plattner and Standford, 2009) to construct an imaginary 'user' as a specific focus for their project. Except for 2008 when group work was mandated, all projects were individual projects. In 2008 and 2009 the projects followed a traditional design process without the inclusion of Design Methods Tools and with virtual, Computer Aided Design (CAD models) outcomes. However, in 2010 there was the requirement for a prototype at the end of the project. In 2011, 2013, 2014 the adapted version of the Ideate and prototype (Plattner and Standford, 2009) Design Methods Tool (figure 4) was introduced as a learning activity into the curricula.



Figure 2. Examples of Project outcomes by Product Design Engineering students at Swinburne University, Melbourne, Australia 1. Rice De Husker for Sudan 2009, Tobias Selkirk. 2. Kinetic Phone charger for India 2013, Clint Graham. 3. DIY Biogas Stove for in India 2011, Claudia Marcela Lopez. 4. DIY face marks for India 2011, Lucas Chan.

The Study

The study involved the analysis and rating of projects by the author, based on images and student presentations from 2008 – 2014 (a total of 112 projects), using a series of Appropriate Technology criteria derived from Murphy et al's principles and framework (see below). Documentary analysis of images of projects within a case study framework is a well-documented research method (Silverman, 2005). The method's advantage was the data was reviewed consistently.

Projects from yearly cohorts were compared using the sub-criteria (as outlined below) to determine if there had been a change in projects over the time of the study. The author's criteria differed from the original Appropriate Technology framework (Murphy et al., 2009) in the following ways; firstly the sub-criteria were sorted into broader categories of:

- Technically Appropriate (products that performed a function and solved a problem) with sub criteria of; meets the user's needs, reliable proven technology, affordable, understandable to use and maintain, performs a desirable function.

- Environmentally Appropriate (technically appropriate products made from locally sourced materials, minimised waste and toxic emissions and worked towards, where possible, a cradle to cradle approach for materials) with the sub criteria of; made from local materials, sustainable source and processing of raw materials, sustainable in the use and end of life phases.

- Socio-Culturally Appropriate (technically and environmentally appropriate, either the production of function creates a positive social impact on at least 1 or more levels and therefore socially and culturally appropriate) with the sub criteria of; positive social impact and well-being, empowers the user, culturally and gender sensitive and provision of a technology transfer mechanism.

Secondly, a scale of 1(low) to 5 (high) was allocated to equally weight sub-criteria, thirdly and subsequently numerical findings were totalled, tabulated and compared for all three categories per yearly cohort so that any changes over time could be compared numerically. The percentage of high rating outcomes (scored between 18 – 25 from a possible maximum of 25 points) for each category per yearly cohort was recorded. As the author did not directly teach the unit in 2012, this data was removed from the sample.

Findings and Discussion

Numerical findings collating the high scoring outcomes from the ratings from all three Appropriate Technology categories as outlined above, were totalled, tabulated, and compared between cohorts. The percentage of high scoring projects per category per cohort year can be seen in the graph Figure 3. Analysis of the project outcomes (figure 3) showed that the percentage of high rating outcomes per cohort has increased in all categories over the time of the study, indicating the 'fit' of the product solution with a user (a specific composite character) in a specific context in addressing the technical, environmental and social requirements. This change was not just in the Technically Appropriate category as would be expected due to the clear relationship between prototyping and technical resolution. Whilst it is not possible to identify all of influences that contributed to this finding, during the time of the study the most important teaching intervention was the inclusion of Stanford's Ideate and Prototype Design Methods Tool (Plattner and Standford, 2009), as a learning activity within the curricula.

The original Ideate and Prototype Tool requires designers to start making a series of iterative physical prototypes early in the design process, using the act of making to better define the design problem, search for new approaches, and test out ideas quickly (Plattner and Standford, 2009). The adaptions to the Ideate and Prototype Tool as a learning activity, in 2011, 2013 and 2014 are shown in figure 4. As anticipated, due to the students' technically focused prior studies coupled with physical prototyping, the largest number of high-rating projects were found in the category for Technically Appropriate.

However, speculatively, the Ideate and Prototype Tool also influenced ratings in other categories specifically; Environmentally Appropriate and the sub criteria of (a) Sustainable source of raw materials or recycled materials, (b) Made from local materials, (c) Sustainable processing of materials and Socio- Culturally Appropriate and the sub criteria of (a) Local skills to make the product relates to the local value chain, empowers the user in a social or economic way, (b) Increases well-being for the individual or the community, and (c) Technology transfer mechanism.

There were challenges and successes in using the Ideate and Prototype tool. Positive aspects were; design outcomes became less complex and thus more suitable for the context; materials limitations were tested resulting in improved specification; increased understanding of how to make products grew from the experience of actually making the product; the physical outcome increased peer critique, dialogue and the development of a rationale for design decisions; and the experience of using the product increased empathy with the user. Challenges included student reluctance to work iteratively, difficulties in making things by hand, difficulties in getting the 'real' materials either due to supply or cost, problem solving

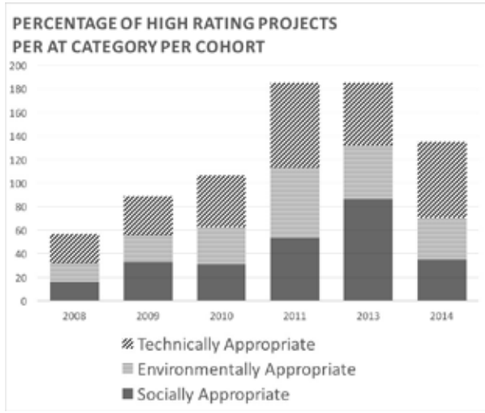


Figure 3. Graph summarising findings from analysis showing the percentage of high scoring projects (scored between 18 – 25/25) in all categories per yearly cohort.

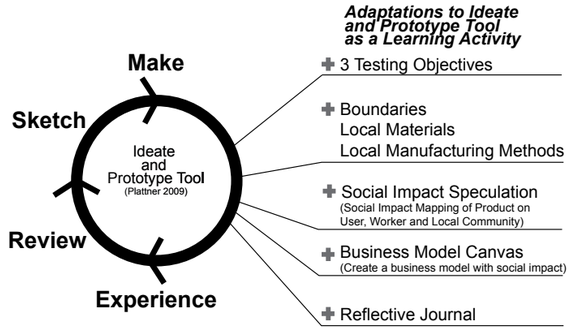


Figure 4 Adaptions to the Ideate and Prototype tool by the author in comparison to the original tool by Plattner 2009.

through making was an unfamiliar experience and confronting students' belief that CAD and calculations were easier than physical testing. Empathy or empathic approaches could not be measured in this study; however, this research indicates that consideration of the fit between user and product was inspired by the application of the adapted Ideate and Prototype Tool. Could this tool could be further adapted to expose more contextual aspects?

Conventional physical prototyping in the product design process is defined as approximation of a product along one or many dimensions of interest, manifested as a 'looks like' or 'works like' approximation to prove function, human factors, assembly, manufacture, or confirm visual shape or form (Ulrich and Eppinger, 2015). However, experience prototyping goes further, exploring the sensory aspects of a product, discovering the product's role in a user's life, and how it might be useful (Buchenau and Suri, 2000, Koskinen et al., 2011). Experiences are hard to replicate and explain as they depend on perception, are influenced by contextual issues, and the reading of multiple sensory qualities (Buchenau and Suri, 2000). An experience prototype therefore may be in whatever form is necessary to communicate the experience (Koskinen et al., 2011). One of the fundamental tenets of experience prototyping is that experience is subjective, thus the best way for a designer to understand an 'interaction' is to actually have the experience. In the absence of first hand fieldwork, the inclusion the boundaries of local materials and local fabrication in the adapted Ideate and Prototype Tool, moved designers closer to understanding the 'experience' of the international user, propositionally increasing empathy with a specific user (composite character) in a specific context. To improve the rating of product outcomes against other Appropriate Technology categories, it could therefore be inferred the inclusion of other types of prototypes (for example experience prototypes such body storming or movies) specifically with the objective of increasing designer's empathy in addressing social and cultural criteria, could be incorporated into the Ideate and Prototype Tool to inspire the development of holistic design solutions.

Conclusion

In conclusion, the findings from this study suggest there is a relationship between meeting the tenets of Appropriate Technology across all evaluation categories as a result of empathic design methods. Teaching Socially Responsible Design by undertaking projects with organisations outside the university is a successful model for increasing designer's empathy with/for users different to themselves thereby encouraging designers' understanding of how to design for specific and different users in specific contexts. In the study, the adapted Ideate and Prototype tool offered benefits in teaching Socially Responsible Design: A working prototype provided the student designer with the opportunity to experience and understand using the product, improving usability and the opportunity to gain empathy for their composite character/user. Whereas the requirement for the use of local materials and fabrication techniques led students to understand the user (and or maker's) context and directly experience the challenges of making. This was particularly relevant for DIY and hand made products.

Extending the capabilities and objectives of the Ideate and Prototype Tool to be additionally inclusive of experience prototyping poses the opportunity for increased empathy with many additional aspects of the user in context, responding to the requirements from all three categories of Appropriate Technology developed during the study. Conceivably, development of the designer's empathy (with the user in context) compels them in looking at solutions from multiple perspectives in addressing these broader aspects. Significantly this study offers designers and educators one way to understand 'how to' design for users very different from themselves, further highlighting the need for holistic design solutions that go beyond the physical product. Extending the capabilities of the Ideate and Prototype Tool also exposes different and diverse requirements of an unfamiliar context assisting designers to develop empathic approaches.

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Co-designing newcomers archives: discussing ethical challenges when establishing collaboration with vulnerable user groups

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ABSTRACT

Living Archives is a research project exploring the roles of archives in a digitised society. Together, with the Malmö City Archives, we initiated a project aiming at prototyping co-archiving practices for young newcomers, to contribute to a newcomers archive. The project emerged as a reaction to the situation in 2015, where 162,877 people sought asylum in Sweden. In response to this situation the Malmö City Archives is organising activities to welcome and help integrate newcomers. This paper however, doesn't focus on the design proposals prototyped as part of the project, but on ethical challenges when collaborating with vulnerable user groups. Before starting the research process we attended a seminar to discuss our ethical stand. We also revisited the ethical standards in research, as well as papers on ethical considerations in design research. Nevertheless, in encountering the youngsters we realised that we were not adequately prepared. To think about ethical standpoints in theory is one thing, but what happens in situ is something else. In this paper we highlight our personal experiences in our first meetings with the user group. We discuss the complexities of establishing collaborations with vulnerable groups, to avoid a naïve view of what such projects, and collaborations require in terms of time and resources. Given the current refugee situation and the potentials of design actions to tackle major societal problems, it is likely that many design researchers will be engaging with these issues, thus these discussions are required.

Keywords

co-archiving practices, newcomers, ethical challenges

Exploring Archiving Practices in A Turbulent World

Living Archives is a research project at K3, Malmö University exploring archives and archiving practices in a digitised society from a range of perspectives. One of the aims is to research, analyse and prototype how archives, for public cultural heritage, can become a significant social resource, creating social change, cultural awareness and collective collaboration pointing towards a shared future of a society. In collaboration with the Malmö City Archives, Living Archives initiated a project aiming at exploring and prototyping alternative collaborative (co-)archiving practices, inviting young newcomers to Malmö to generate archive material for the official city archives – a newcomers archive. The basic idea was to prototype alternative forms of archiving practices for involvement of more varied voices in documenting Malmö, from their unique and personal outlook, and thus create a better understanding of the perspectives of the "other".

The project emerged as a reaction to the current world situation. The crisis in Syria and the wider region has had a sizeable impact on the number of people seeking asylum in Sweden, rising to historically unprecedented levels. In 2015, 162,877 people sought asylum in Sweden, which represents a significant increase on previous years (The Migration Agency, 2015). In response to this situation Malmö City Archives, as part of Malmö City Council, are currently organising various activities aimed at welcoming and integrating newcomers to Malmö. The aim of the City Archives is to document Malmö, share information about Malmö's history, and common cultural heritage. They are also tasked with documenting and recording Malmö's contemporary life, including situation with newcomers' to the city.

Research Focus and Aim

Seven interaction design master students at School of Arts and Communication (K3), Malmö University, were invited to contribute to the project. During a 10 week course they prototyped a series of co-archiving practices, aimed primarily at opening the archiving process by creating practices that invited more people to contribute with material for the archives. The intended user group was unaccompanied young newcomers, aged 15-18 years. The students moved beyond words, and pictures by involving others senses and elements such as humour, smell, face and voice expressions. This resulted in two design proposals: "Mosaic of Malmö" and "Designing an archiving practice using comedy for the newcomers".

The aim of this paper is not to present the two design proposals, but to reflect upon, and share ethical challenges faced when establishing collaboration with vulnerable user groups. The aim is not to produce a collection of practical guidelines, since there are already useful examples to be found (see e.g. DU, 2012; Light and Akama, 2014; Robertson and Wanger, 2013). Instead, our aim is to highlight some of our personal experiences in the role of designers, and reflect upon our first meetings with the vulnerable young adults, human to human. We refer to our user group as a vulnerable since they are in a particularly exposed situation in life, arriving in Sweden on their own to seek asylum. They live together with other young newcomers in hostels provided by the municipality, or with host families. In 2015, 35,369 unaccompanied children sought asylum in Sweden (The Migration Agency, 2015).

Methodology, Research Process and Setting

The methodological approach applied by the interaction design students was participatory design (PD), so prototyping and design interventions were part of the research process. Their activities were conducted in real-world settings, inviting the user group to be part of a co-design process, which are central principles of PD. Instead of designing for the users, the designers and/or researchers work with the users in a process of joint decision-making, mutual learning and co-creation (Simonsen and Robertson, 2013).

The first challenge encountered when initiating the research process, was the difficulties in making initial contact with potential participants. Contact had to be attempted via the municipality (as “gate keepers”, given the vulnerable nature of participants), an invitation was sent to a large group of people potentially interested in taking part in the project. However, only two individuals (both males) responded. One of the initial respondents brought a friend, thus increasing the total involved in the project to three participants. Besides a possible lack of interest in the project, another potential reason behind low levels of engagement might also be a poorly designed invitation, that failed to properly target the young newcomers specifically, but rather focussed on their caretakers. A further complication that arose with this initial contact was a lack of a communication strategy at the municipality. This meant our invitations were lost in the mass of information being distributed to this group. Malmö City was aware of the problem, and was in the process of developing a new communication strategy that would facilitate easier contact in the future with this particular group.

Prior to starting the research process all interaction design students, and researchers were invited to participate in a seminar to discuss ethical issues surrounding the up-coming project. We discussed our individual ethical standpoints, and revisited the ”Ethical Standards in Research’” formulated by the Swedish Research Council (2011), as well as reading various papers on ethical considerations in design research (Light and Akama, 2014; Robertson and Wanger, 2013). Ethical guidelines and principles, unsurprisingly, do not cover all eventual situations. Many guidelines are designed specifically not to be too detailed or prescriptive, and to encourage and foster ethical practice within the design process.

Facing Ethical Challenges in a Real-World Context

Besides the two design proposals expanding the idea of what a city archive might constitute, other, possibly more significant learning outcomes were drawn from the meetings with the user group themselves, which this paper focuses on. We realised that in encountering the youngsters that we were not adequately prepared. To think theoretically about ethical practices is one thing, but what happens in situ is something different.

The introduction meeting was carefully planned with the aim of creating a convivial space. We didn’t put focus on backgrounds, instead we introduced the project, the university, and interaction design as a research and study field. The participant that attended the first meeting also presented himself. He didn’t say anything about his past, and we didn’t ask. In hindsight it felt disrespectful to not broach the very reason he was invited to participate, his background, and the fact he was a young refugee seeking asylum in Sweden. Evaluating the meeting we realised we didn’t ask about his past due to trepidation at what we might unearth. With the possibility, and high degree of probability, that he had fled terrible conditions; and was in the process of establishing a new life in an unknown, and unfamiliar part of the world, divorced from his normal support networks, such as friends and family. Inadvertently we chose not to engage in a potentially uncomfortable discussion. Upon reflection this had more to do with our own fears, but also the very real problem that we were not trained in how to deal with such traumatic, and potentially distressing conversations. We have been unable to discuss the meeting with the participant to ascertain his experience, meaning this important perspective is missing from our analysis.

Another noteworthy insight expressed by participants is that they found it stigmatising to be categorised as refugees, and preferred to be referred to as newcomers, just as any other teen arriving to Sweden would be. As emphasised by the interaction design students, they were not only newcomers, they were also teens with full lives, and their identities were not defined by any one facet. Ultimately the interaction design students felt they were complex to work with because they were unpredictable teens, and hard to arrange appointments just as any other young person living a full life of activities and excitement.

Learning from Previous Design Research and Other Disciplines

Design research literature that discusses ethics in PD contexts, has mostly focussed on the political motivation, and the ethical standpoint that those effected by design ought to have a say in the design process and in joint decision-making. The focus has been on the overall belief that inviting the user “into the design of invisible mediating structures around them” (Light and Akama, 2014, p. 153) will result in more sustainable solutions, a more democratic future, and is thus the right thing to do ethically. Of less concern is how to handle the actual meetings with individuals, who in many cases are resource weak stakeholders or vulnerable user groups, as they were in our case. One approach suggested by Bannon and Ehn (2013) to meet the challenge of establishing collaborations with stakeholders and navigate power relations is “thing”, described as “socio-material ‘collective of humans and non-humans’, through which ‘matters of concerns’ or controversies are handled” (Light and Akama, 2014, p. 152). A thing is a meeting between designers and stakeholders, including material objects, such as various workshop materials. Things ought to support the establishment of long-term relationships where continuous co-creation can be realised. From this perspective design is seen as a relational activity where time is a crucial factor. The PD process is not foremost about designing products and systems, but about designing conditions for building social, dialogical relations and creating structures of care (ibid), which is a perspective on design moving from “projecting” to “infrastructuring” (Björgvinsson et al, 2012).

Even if PD practitioners can handle the art of setting up a structure for inviting young newcomers to start a collaboration, the situation relating to power and fear is more complex than pure power dynamics. As designers we often step into unknown domains, or are required to handle new situations; but reality bites, when it comes to building social and dialogical relations, it is not always as simple as the theory suggests. Designers ought to see what can be learned from other disciplines that work with vulnerable groups, and what coping mechanisms exist for handling difficult discussions, and managing our duty of care towards vulnerable participants. Suggested disciplines to explore further might be migration research, and psychology specifically empathic studies. Unfortunately, in this paper we don’t have the opportunity to dive into these fields and explore how they could play a role in PD.

However, learning from empathic studies we may take the first tentative steps in exploring the difference between empathy and sympathy, and the subtle differences in relation to our work. Empathy is increasingly recognised as an important in the design process (Kouprie et al, 2009). The ability to observe, understand and predict the behaviour of others, or how they might respond to situations, or stimuli can be useful in developing design solutions. In many respects it could be argued that empathy is a key component of PD, when you consider that it is centred on contextual inquiry, aimed at observing, engaging and mutual learning and development (Spinuzzi, 2005). As such, given that the empathetic process itself involves a sense of intuition based on mutual understanding via a connection to the other, which enables us to consider and predict behaviour and motivation (Bowlby, 1982). However, psychological definitions of empathy require an understanding of the other person, or persons. Essentially without understanding, the ability to place yourself in the experiences of others is lost. In this situation you are not being empathetic, but rather are being sympathetic (Gruen and Mendelsohn,1986).

Clearly in retrospect, and in reflecting upon our meetings with the young newcomers we realised that we lacked understanding of the situation the young newcomers were in. We were simply acknowledging their emotional hardships, and of the two options, of either choosing to ignore those out of fear of causing offence, or offering emotional comfort and assurances we ended up choosing the first option.

Two Scenarios in Future Design Projects Involving Newcomers

Our project was planned and set up with the good intention of involving and engaging young newcomers. However, in hindsight we realised that to truly show a “regard for the other is the central principle for dialogue ethics, requiring that one see one’s self in the place of the other“ (Robertson and Wanger, 2013, p. 68). Intuitively our first meeting felt wrong, but in situ, being there we could not have acted differently because we simply didn’t dare to unpack the full story, and didn’t have the tools to do so. We postulate that establishing collaboration with vulnerable groups not only demands long-term engagement and time, but also a deeper understanding how to unpack and meet personal stories with empathy and support, rather than sympathy. It is highly difficult to share personal traumatic histories, in hour-long meetings, more time is needed, and time is often not on our side.

In future PD projects involving vulnerable user groups, there are, as we see it two possible scenarios. The first is to not acknowledge the limitations of a designer to handle sensitive matters, but ignore the users’ backgrounds and to engage as you would with any other participant, even if that intuitively feels wrong from a humanistic stance. The second scenario is to acknowledge the limitations of designers, invite ethical expertise from other fields, and go for an open and truly inclusive, but much more complex approach, daring to unpack personal histories, even if they are tragic. As already put forward, we unconsciously chose the first scenario, which in retrospect was disrespectful and wrong. Given the current refugee situation, and the potentials of design actions to tackle major societal problems (Ehn et al, 2014), in all likelihood many more design researchers will be engaging in this field. Future work must acknowledge the complexities of establishing collaborations with vulnerable groups and avoid a naïve view of what such projects and collaborations require in time and resources.

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Therapeutic habitat for Alzheimer's Disease

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ABSTRACT

As the most common form of Dementia, Alzheimer's Disease (AD) causes behavioural, cognitive and physical impairments that affect person's ability to function in daily life.Currently, research shows there is no cure for AD. Hence, a new paradigm is needed that focuses on minimizing the symptoms of AD and enhancing the well-being, listening empathetically to the experiences and concerns of carers, rather than focusing only on a search for a cure. From biology we adopt the term Habitat as the certain set of conditions that guarantee a species, to take root, spread and reproduce, in a given environment, aiming to propose the model of Therapeutic Habitat as a set of environmental conditions, specifically designed according to people with dementia's needs, that involve physical, cultural, social and anthropological aspects of human life, enhancing well-being and quality of life.

Methodology – After a first literature review, interviews with therapists and caregivers where conducted by the authors, in order to define specific characteristics of the Therapeutic Habitat model.

Process – The focus on people with dementia needs is consistent with the literature on dementia care, which suggests that developing a therapeutic milieu for persons with dementia requires a change in philosophy, from managing behaviours to empathically understand and meet needs (Taft, et al., 1993). An empathic design approach offers the opportunity to spot needs and problems of the user. As designers, it's important to foster a meaningful collaboration involving caregivers, with the first-hand experience of the condition, and therapists, able to delineate the therapeutic needs.

Keywords

Alzheimer's Disease, design, non-pharmacological therapies

INTRODUCTION

As the most common form of Dementia, Alzheimer's Disease (AD) causes behavioural, cognitive and physical impairments. It is characterized by memory, thinking and behavioural symptoms that affect person's ability to function in daily life (Alzheimer's Association, 2013). In most instances, the progression of dementia is slow, with a potential duration of twenty years, and consistently changes over time. The cognitive impairments, typical of this condition, lead to errors in one's memory of places and a reduced ability to spontaneously adapt to new spaces. As sufferers begin to realise these changes, they may feel a sense of shame and inadequacy caused by emotional borderline situations resulting from difficulties in performing normal daily routines. Research shows there is no current treatment that can stop AD from progressing. However, pharmacological, and more non-pharmacological interventions, can temporarily slow the worsening of the symptoms and improve the quality of life for people with AD and their caregivers. Specifically, Non-Pharmacological Therapies (NPTs) are treatments that do no involve the use of drugs, aiming to stimulate, activate and maintain the physical and cognitive functions that are not completely deteriorated, acting on the residual potential (Olazaràn et al., 2010). Inside the framework of Non-Pharmacological Therapies, research has shown that the environment can be considered as an important support in caring for people with dementia (Zeisel & Raia, 2000) due to its peculiarity of being able to reduce dysfunctional symptoms and behaviours, and act as a prosthesis, enhancing the well-being of the patients, supplying their lost capabilities (Zeisel, 2006). Therefore, Quality of Life (QOL) has become a major topic of study within dementia research (Brod et al., 1999). Specifically, Alzheimer's disease can profoundly affect the lives of patients and their families. Without a cure, the main question in care becomes how to promote well-being and maintain an optimal QOL.

Aim of this paper is to propose the model of Therapeutic Habitat as a set of environmental conditions, specifically designed according to people with dementia's needs, that involve physical, cultural, social and anthropological aspects of human life, enhancing well-being and quality of life.

An Empathic Approach

Even as a professional designer who has the great knowledge and skill to produce remarkably-good designs, failure may come when we forget that we are designing for individuals, real people. People with AD might be our mother, grandparents or anyone who we are very close with. Just imagine if you were to send your parents to a centre, you probably expect it to be better than what you can provide, with a good nursing and helpful care facilities. However, even if a designer carefully tries to, first, carefully understand people with dementia's needs, and then imagine the experiential consequences of his/her design, the gap between his/her life experiences and those of people with dementia are profoundly different. The risk of misleading design intuitions is high, due to this discrepancy between the two life experiences. Therefore, this highlights the needs to bridge this gulf in experiences. Every one of us understands empathy as a widespread attitude, that represents the ability to reach outside of ourselves and walk in someone else's shoes, to understand what others feel, and the reasons why they feel that (Miyashiro, 2011). Moreover, an empathic design approach enables the designer to focus on the needs and the problems of end-users, sometimes highlighting unconscious needs, that users themselves are not consciously aware (Miyashiro & Colonna, 2011). Wright and McCarthy (2008) identified three qualities that are central to developing an empathic relationship with participants in design:

- a quality relationship between the designer and the user that allows the designer to better focus his/her needs;
- a responsive disposition towards the user;
- a strong consideration of the emotional quality of his/her experience.

According to Wang et al. (2010), the imperative of an empathic design is to get in touch with real end-users with empathy, identifying ourselves with them, in order to acknowledge their needs and their experiences, and satisfy them, at best. Approaches to empathy, and effective emphatical understanding can be association, inner imitation or projection. As designers, in order to be able to understand real needs of people with dementia, it's important to foster a meaningful collaboration involving caregivers, with the first-hand experience of the condition, and therapists, the medical figures able to delineate the therapeutic needs.The result is a personally tailored design artifact, that, through the process of creating tailor-made prototypes, foster the development of a strong relationship between users, therapists, and carers. The quality of the relationship at this stage should improve designers' understanding of the end users' experiences and the design domain, and allow more critical debate to help designers further their understanding. The inclusion of family caregivers, and therapists, alongside with people with dementia, help the development of a useful discussion as they could articulate problems their cared ones struggled with. The focus on people with dementia needs is also consistent with the literature on dementia care, which suggests that developing a therapeutic milieu for persons with dementia requires a change in philosophy, from managing behaviours to empathically understand and meet needs (Taft, Delaney, Seman, & Stansell, 1993). Algase et al. (1996) have suggested that disruptive behaviours are an expression of unmet needs and have identified precipitating factors in the physical and social environments. A safe environment has been described as the most basic requirement in dementia care (Taft et al., 1993). Residents with dementia are particularly vulnerable because of the physical decline associated with aging and because of the presence of cognitive impairments that affect behaviour patterns (Calkins, 1988).

Health Facilities

Health facilities design traditionally has emphasized the functional delivery of healthcare, as expressed in such concerns as providing efficient spaces to accommodate beds or doors wide enough (Ulrich, 1991). This emphasis has often produced facilities that are functionally and ergonomically effective but not from a psychological point of view. Essentially these facilities result stressful or otherwise unsuited to the psychological needs of patients and, also, caregivers. These solutions lack an empathic attitude towards the needs and necessities peculiar of people with dementia. Therefore, there is an increasing evidence that poor design works against the well-being of patients and in certain instances can have negative effects on physiological indicators of wellness (Ulrich, 1991). In the specific case of dementia this stressful condition is even accentuated by the symptoms of the disease. An emphatic approach towards these aspects of people with dementia's life, may lead to the development of health care facilities, and methods, that enhance the patient's well-being and dignity.

Methods

Within our research team Lab.I.R.Int. (Laboratory of Innovation and Research about Interiors) we are pursuing a reflection on Interior Design discipline, through the definition of its tool and its skill, its intrinsic competencies and the ones acquired in a multidisciplinary exchange. This process of re-reading the discipline gave birth to a centripetal vision of the Interior Design System: in the main core there is the culture of '"living" to be understood in a broad sense. Starting from this perspective, since 2005, we are actively researching on the influence of interiors on the well-being and perception of people with dementia. We established a solid collaboration with different therapists, professionals and Alzheimer's associations for people with dementia and their caregivers. This allowed us to conduct, through the years, different focus groups and semi-structured interviews focusing on the influence of interiors on people with dementia, in order to enhance the perceived well-being, dignity, and autonomy of people with dementia. Following the onset of the disease, in the last stages of Alzheimer's disease, a combination of factors, such as severe behavioural problems and exhaustion of the primary caregiver, almost always leads to a transition to a care residence, in order to provide the necessary assistance. The cognitive impairments, typical of this condition, lead to errors in one's memory of places and a reduced ability to spontaneously adapt to new spaces.

Aim of the study, proposed in this paper, was to introduce and define the model of Therapeutic Habitat, as a set of environmental conditions, from physical, to social and cultural, tailored to the needs of people with dementia.

Therapeutic Habitat

As designers, in collaboration with doctors and therapists, it is necessary to reflect on the qualities of an environment that responds adequately to the needs of a space specifically designed for Alzheimer's patients requires and, at the same time, the ability to transfer these qualities in an experimental space that also satisfies the needs of contemporary man. Interior Design, in particular, investigates new forms of living and inhabit, both temporary and permanent, in order to define contemporary habitat(s). With habitat, in scientific jargon, in fact, it is intended the place whose physical or environmental characteristics allow a species to live and develop. Human beings, then, need to recreate for themselves environments that follow new logics, which enable him/her to live according to his/her needs and capabilities: pleasant places, whose fruition make people feel welcomed, housed and has a positive effect on people's well-being. If in the scientific sense, the term habitat refers to a permanently fixed situation in time (just think about animal species, that identify their habitats and live in it for their entire lives), in the contemporary society is more likely alluded to tailored, temporary habitats, able to adapt and act according to the needs of individuals.

A Habitat, an extremely human environment, with a high degree of comfort and protection, able to act as a filter with the outside world, an environment that meets the needs of information and communication that are the basis of our contemporary society, an intangible place that can be freely customized, but at the same time present with well-defined characteristics. This definition is extremely relevant for Interior Design discipline, as it overturns the order of the factors. In fact at the center of all, there's the subject, the user, in the specific case the species, that doesn't build a habitat, but that surrounds itself with it.

Yet, in our study, we propose the passage from the concept of interior (closely related to the concept of building), to the one of habitat. The substantial profound difference between the two approaches can be highlighted by comparing some features:

- While the interiors are necessarily connected to the perimeters of an architecture, as well as its technologies, systems, [...] a habitat is released from this bond
- Interiors mainly consist of a physical location. Habitats are made up of environmental conditions
- Interiors are characterized by a physical nature, which is ex pressed through the logic of spatial distribution, a habitat, on the contrary, is related rather to the search for high level of comfort

Furthermore, the term Habitat is strongly connected with the concept of inhabiting, which, as previously said, represents the cornerstone of the discipline of interior design in the contemporary world. Indeed, the expression Inhabit the Planet refers to a man-made complex system, which goes beyond the limits of the metropolis and the built. But it is also connected with biology, in fact, the term habitat indicates that certain set of conditions that guarantee a species, animal or plant, to take root, spread, reproduce, in a given environment. Hence, in the framework of dementia care, the research proposes the concept of Therapeutic Habitat, a fluid system, based on tangible and intangible aspects; products and furniture, technical equipment, instruments, objects, services. A system of environmental devices/tools, that can enhance the comfort perceived by the patients, solve temporary problematic situations, support activities related to Non-Pharmacological therapies. In this environment, the highly recognizable and distinguishable peculiarities are calibrated to stimulate a feeling of familiarity, trust and intimacy. People with dementia, and more specifically affected by Alzheimer's disease, are fragile individuals that need a tailored environment (physical+social+cultural) to guarantee a certain level of well-being and dignity (Fig.1).

Furthermore, even if the disease changes their perception of time and space, people with dementia live in a world where relationships, objects and situations matter, even if they encounter some difficulties in expressing their feelings and concerns. Therefore, the peculiarities of an environment take on relevant importance, as they can reduce dysfunctional symptoms and behaviours, enhance well-being, offer the opportunity to engage voluntarily in meaningful activities maintaining control over daily life, and can support social interaction, enhancing a sense of self. New concepts in the built environment, person-focused philosophies of care and an increasing understanding of the "experience" of dementia has lead to viable alternatives in long-term care provision. Shifting the emphasis from condition to experience encourages the culture change needed to create environments that allow the person with dementia to be an active participant in everyday life rather than a passive recipient of care. Hence, in the specific context of dementia Care, the term Therapeutic Habitat is associated with a wide context of care, that place the person in the centre, involving physical, cultural, social and anthropological aspects of human life. A Therapeutic Habitat is tailored to dementia needs, and involves physical features, such as objects, furniture, environmental devices, climate and sound control, outdoor elements, as well as social interactions, fostered by the environment, and cultural features and rituals. In the specific case of therapeutic environments for people with dementia, guidelines and recommendations usually take into consideration parameters such as building organization, overall security, provision of outdoor areas, orientation within the building, etc. These are parameters, mainly, associated to an architectural point of view, strictly connected to the building characteristics. On the contrary, the quality of life is even more strongly related to the quality of the complex socio-environmental system in which Alzheimer's patients live. This complex system consists of environmental factors, as well as objects and human interactions. A complex and multi-layer system, in which we have to manage the emotional fragility, as well as the extremely sensitive nature, of people being affected by dementia due to AD. A complex and multi-layer system, that requires a complex and multi-layer approach, closer to the logic of design discipline, as well as a developed sensibility to the human factor. Fig.2 describes, from a physical point of view, this multi-layer approach of the Therapeutic Habitat model.

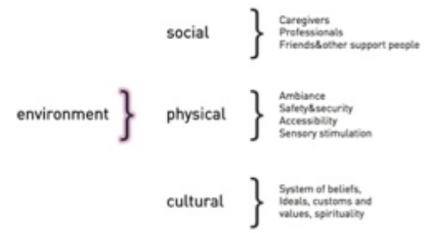


Figure 1. environment as the overlap of physical, social and cultural features.

Hence, this study considers the physical space as an overlap of three layers: architecture, furniture and objects. Furniture and objects, in this model, act as activators of opportunities for social relationships, conversations, performing daily rituals, aggregators. Yet, they foster the enhancement of the fundamental social and cultural environment, important for people with dementia, to continue to live their daily life with total engagement.

Discussion

The focus on people with dementia needs is also consistent with the literature on dementia care, which suggests that developing a therapeutic milieu for persons with dementia requires a change in philosophy, from managing behaviours to empathically understand and meet needs (Taft, Delaney, Seman, & Stansell, 1993). Algase et al. (1996) have suggested that disruptive behaviours are an expression of unmet needs and have identified precipitating factors in the physical and social environments. A safe environment has been described as the most basic requirement in dementia care (Taft et al., 1993). Residents with dementia are particularly vulnerable because of the physical decline associated with aging and because of the presence of cognitive impairments that affect behaviour patterns (Calkins, 1988).

As designers, in collaboration with doctors and therapists, it is necessary to reflect on the qualities of an environment that responds adequately to the need of a space specifically designed for Alzheimer's patients' requirements and, at the same time, the ability to transfer these qualities in an experimental space that also satisfies the needs of contemporary man. A Therapeutic Habitat, an extremely human environment, with a high degree of comfort and protection, able to act as a filter with the outside world, an environment that meets the needs of information and communication that are the basis of our contemporary society, an intangible place that can be freely customized, but at the same time present with well-defined characteristics. This model is delineated as a fluid system, based on tangible and intangible aspects. Products and furniture, technical equipment and services are interconnected into a large organism, able to go beyond the architectural container, adapting itself to the changes in order to satisfy human needs. The potential benefits of implementing such a model include preservation of personhood, simple recognition of remaining abilities and a decreased focus on disabilities, and reduction of pharmacologic therapy for disruptive behaviours resulting in overall improvement in the quality of life.

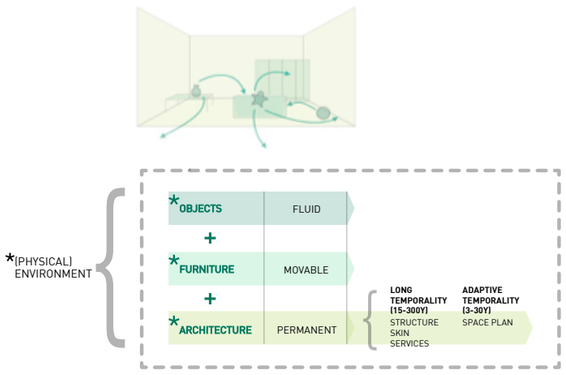


Figure 2. Physical environment in the therapeutic habitat model.

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Sensory storytelling: a method for deep design insights

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ABSTRACT

This short paper shares the results and knowledge acquired during a creative research project during which psychologists collaborated to bring new insights into the development of empathy and the strengthening of relationships through design. A series of co-creation workshops based on Sensory Storytelling techniques were conducted with psychologists at the CPPL – Centro de Pesquisa em Psicanálise e Linguagem, a psychology centre in Recife-Brazil. In this participatory research, the psychologists were guided to develop narratives stimulated by the five senses of sight, hearing, touch, smell and taste. The workshops were divided in three phases: Evocative objects (an introduction to the concept of sensory storytelling by encouraging the attribution of meaning to objects); Creating Personas (representing personality attributes by using a wide range of visual and tactile materials); and Envisioning Relationships and Empathy (scenario-building activity to imagine the relationship between the personas and ways to develop empathy between them). The ludic aspect of this research facilitated communication, enhanced engagement and fostered the development of collective narratives. This provided a rich base of inspiration for designers to work with. The project offered insight into the various ways in which we can appreciate and share the complexities of the others and begins to imagine tools to facilitate empathy.

Keywords

sensory storytelling, empathy, co-creation

INTRODUCTION

"Stories are a part of being human, they are something we all share in, no matter our age, ability, race, ethnicity, religion, gender or sexual preference, we all share and create our own stories every day." (Grace, 2015b)

In the summer of 2016, I embarked on a research project intended to draw insights from a group of psychologists on my thesis work: Designing for Empathy. I developed a research method that I call Sensory Storytelling. This method builds on existing methods of generative research and sensory stimulation to help individuals dig more deeply into their experience and facilitate the communication of tacit, intuitive knowledge.

When I began my research into Designing for Empathy, I noticed how preconceived ideas, judgments and poor communication skills could create barriers of understanding between people. The gap between what we experience inside of us and what we are able to express to the outside world makes it challenging to understand and accept each other. These qualities are foundational to empathy. I decided to reach out to the psychology community for their expertise in human relationships and dialogue building, hoping to find inspiration for how to design to support empathy in human interactions.

The following paper details the application of the Sensory Storytelling method in co-creation workshops. I discuss what I learned about empathy and Sensory Storytelling as a research method, and how this method can help designers and participants deal with the uncertainty and complexity of design research for empathy.

From Visual Storytelling to Sensory Storytelling

During a preliminary inquiry with a psychologist, I realised that there was a communication barrier between us. The psychologist didn't share the same design vocabulary that I used and, in addition, she had a different cultural background, life experience and native language. This made our communication challenging. In an attempt to better express my design process, I showed a visual journey map I had developed about one day in the life of a person who misses important moments of connection and empathy throughout her life (Fig 1). Looking at this visual story, the psychologist immediately understood what I was saying, gave valuable feedback and, in that short interview, even conceptualised a tool that could help her work with her clients. Visual storytelling

was the key to communication between the psychologist and myself in that moment.



Figure 1. – The visual story of Jane's day

Seeing the success of this visual story in translating ideas, helping us to stop relying only on words, inspired me to take this one step further and imagine what might be the benefits of working with all the senses to convey and understand narratives. Could a Sensory Storytelling experience — one that could be experienced with our whole body — help individuals access their thoughts and feelings and better communicate with others? Krznaric (2014) says that "conversation and empathy are intimately intertwined […]. The challenge is to rethink how we talk to people so we can gain greater insights into their thoughts, feelings, and world views and deepen our emotional bonds with them".

With the intention of opening a creative, generative space for conversations within my project, I designed a participatory research method that I'm calling Sensory Storytelling. This method was developed to help individuals dig more deeply into their experience and facilitate the communication of tacit, intuitive knowledge. Sensory Storytelling is based on the concept of generative research – described by Sanders and Stappers (2012) as a method that "gives people a language with which they can imagine and express their ideas and dreams for future experience" – and builds on the existing methods of sensory stimulation that, according to special educational consultant Joanna Grace (2015a) is being used with children with learning disabilities to open up communication and the expression of preferences. According to Grace (2015a), "sensory stimulation enriches life for everyone and sensory stories are a beautifully simple way of facilitating that stimulation." She also believes that sharing the storytelling space with others helps to foster social connections and build community.

Hands-on Research Exploration

During July and August of 2016, I conducted a series of co-creation workshops with psychologists at the CPPL – Centro de Pesquisa e Psicanálise e Linguagem, in Recife-Brazil, in order to bring new insights to this research project. Sensory Storytelling techniques and sensory objects were used throughout the co-design process as a way to facilitate communication, enhance engagement with the research participants, and generate new and effective ideas. The main goals were to gather information about empathy, experiment with Sensory Storytelling as a research method, and validate that method in a design context.

Evocative objects – Icebreaker

The workshop started with an icebreaker activity. Inspired by evocative objects – described by Sherry Turkle (2007) as "things we think with" – I chose a collection of objects based on their sensory qualities and their potential to stimulate multiple interpretations. Participants were asked to choose one object from the collection and present themselves by saying their name, the kind of work they did, one or two keywords that described the object and how they related to that object.

Some of the participants took the time to look at all the objects and choose the one that would best represent them as a person while some participants quickly chose the object that most caught their attention and only later interpreted how they saw it being related to them, or to a moment from their life. This first intuitive activity was intended to introduce the participants to the concept of sensory storytelling by encouraging them to attribute meaning to objects, and it also helped the participants to connect and get to know a little more about each other in a playful way.

A persona is the archetypal description of an individual's behavior that, according to Hanington & Martin (2012, p. 132), humanises design focus and facilitates communication. With the intention of facilitating the visualization of relationship challenges, I asked each participant to create a persona. They were given an outline of a figure and a wide range of visual and tactile materials (Fig 3). In order to generate as much subjective data as possible, the task was intentionally left open for interpretation and the participants were encouraged not to use words at this point. They were guided to create a persona that had difficulty relating to others and to give meaning to the materials offered.

Once the personas were created, participants were asked to describe the challenges and qualities of a persona that someone else had created. Pink post-its were used to describe the challenges and blue post-its to describe the qualities (Fig 4). They could only rely on the type of materials chosen and how they were used in order to interpret and analyze the persona. They ended the process by describing the challenges and qualities of their own persona. I noticed that starting with a different persona allowed the participants to dissociate themselves with their creation and look at the features of the persona in front of them with a fresh set of eyes.

They presented their personas with the descriptions provided by the other participants, allowing us to see the meanings the participants gave to the materials, creating deep and complex human



Figure 2. – Sensory objects offered at the workshop Creating Personas

descriptions. Each contribution created a new layer of complexity and helped the participants better understand the personas' identities, feelings and needs. Analyzing the use of materials gave us the opportunity to see how the chaotic use of beads and yarns on a head suggested confusion, mess or inability to deal with things. Tangled ribbons on a belly were seen as representing unprocessed and unsolved issues, while steel sponge was used to represent reactive and aggressive behavior (See table 1).

For example, Persona H at first appears to present confusion and aggressiveness, but taking a closer look the sand paper and rubber squares can be seen as creating a form of shield as if the persona was trying to protect himself. I also wonder if the silicon circles under his feet means that he fears failing or making mistakes. Looking at these features allows a viewer to see fear behind his aggressive behavior and begin to understand and empathised with him. It doesn't mean this person doesn't have an aggressive behavior, but it means that we can understand and integrate another layer of complexity in the description of his personality.

The open-ended quality of the materials allowed the possibility of multiple interpretations and pushed participants to revisit their own beliefs around the meanings they associate with textures and colors. One participant was quite impressed with the accuracy with which the others described the persona she had created – "What others saw was exactly what I wanted to represent!" (Participant B). This indicates that this activity was very effective in communicating abstract emotional information and it also helped me, the designer, to understand and empathise with the personas.



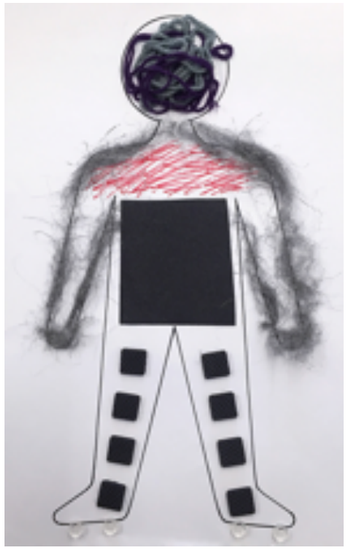
Figure 3. – Participants developing personas
Figure 4. – Participants using post-it notes



Persona D



Persona G



Persona H

• Use of materials: Red and black beads were glued to the head, a violet paper stripe was glued to where the mouth would be and a long black satin ribbon was tangled in the belly. • Challenges keywords: contention, imprisonment, shutdown, difficulty to speak, headache, constipation, unresolved love, depression, mind vs. body and maelstrom. • Qualities keywords: density, capacity to elaborate, calm, tranquility, determined, tough and resilience. • Use of Material: Color ribbons were tangled in the belly together with some black and red sequins, two black rubber squares were placed on top of the shoulders with color tape and color markers were used on the body to draw lines, a face and hair.	• Challenges keywords: difficulty to speak, difficulty to open herself, difficulty to make friends, sadness, lethargy, confusion in the stomach is reflected in the head, difficulty to understand feelings, pain and circulation problems. • Qualities keywords: joyful, optimistic, good mood, friendly, creative, funny, solidary and strong. • Use of materials: Grey and purple yarn was tangled and glued to the head, pieces of steel sponge were glued to the shoulders and arms, a red marker was used to scribble the chest, a square piece of sand paper was glued to the belly, four black rubber squares were glued in each leg and two clear silicone circles were glued under each foot.	• Challenges keywords: armed for fear of getting hurt, defensive, closed person, confusion, difficulty to communicate, reactive, prickly, difficulty to bond, mourning and heavy. • Qualities keywords: strong, active body, calm, go with the flow, thoughtful, reflexive, elaboration of thoughts and introspection.

Table 1 – Sample of personas developed in the workshops

Envisioning Relationships and Empathy

In the final step of the workshop, I introduced a scenario to the participants: the personas had to go on a car trip for twenty days. The participants were asked to describe how the interaction between the personas would take place during this journey. They quickly created a collaborative story about relationships and the challenges of participating in a diverse group, and when they finished I asked them to go back to the collection of evocative objects, choose three, and imagine how those objects could help the personas strengthen their relationship during that journey.

While some objects were used in a more literal way, taking their functionality into account, others were used in a more personal way where the emotional connection between the object and the person who holds it evokes a meaning that is very particular to that context. A wine cork suggested a possible moment of connection. A piece of lace could set the tone of a conversation and bring memories from the past. Cinnamon and cloves inspired collaborative cooking and sharing a meal. Tea bags, candles, crystal rocks, perfume and a little cushion were seen as things to comfort and relax.

The result of this activity was a collection of sensory objects that became the representation of the participants' knowledge about ways to develop empathy and strengthen relationships between individuals (Fig. 5). Each group of participants emphasised, in different ways, the value of a relaxed environment where people could share moments of joy and get to know each other better.



Figure 5. – Collection of sensory objects from each of the three workshops

Reflections and Considerations

The playful and sensitive nature of this research, as well as the experiential knowledge of the participants, were very important throughout the development of the collective stories and resulted in a very caring way of dealing with complex and abstract information. Three main sets of objects were identified as important when dealing with relationship challenges. They were:

- Objects that evoke relaxation: Many objects were chosen to emphasise the importance of relaxing in moments of tension. Being able to do things to feel more comfortable and relaxed could go a long way in opening internal spaces to be with others.

- Objects that initiate group activities: The idea of doing fun activities together was very present in the choice of objects. Participants believe that group activities can help release tension and foster friendship.

- Objects that start conversations: The psychologists believe that getting to know each other and hearing each other's stories could lead to better understanding and acceptance of one another.

According to Krznaric (2014), empathy involves making an imaginative leap into someone's experience, gaining an understanding of their perspective and feelings, and using that understanding to guide our actions. By providing a model, the time, and the tools for the participants to deeply understand the personas and envision relationships, they were able to empathise and suggest actions that could help that specific group of people improve their relationships. The Sensory Storytelling method brought insight into different ways people can appreciate and share the complexities of the other and helped designers and participants deal with subjective emotions. The interaction with the sensory objects also helped the participants access their knowledge, engage in deep and abstract conversations around relationship challenges, and externalise their insights with a rich base of inspiration for designers to work with.

The use of sensory stimuli also created an engaging environment where the participants felt comfortable reflecting on their own professional practice and talking about what they could do to better relate to their clients. "This workshop made me think that my office is cold. There is a lack of things to comfort and welcome my clients" (Participant G). "It would be interesting to create a space or a 'thing' that neutralises the tension" (Participant B). At that moment, supported by the whole sensory experience, the participants began to imagine tools to facilitate empathy.

Conclusion

This short paper shares the results and knowledge acquired during a research project intended to gather information about empathy, experiment with a new research method, and articulate the benefits of applying this method in a design context. Valuable insights about ways to develop empathy were gathered from the interaction of the participants with sensory objects. The playful and sensitive nature of the Sensory Storytelling method helped the participants articulate their knowledge in a very effective and caring way. The method also offered insights regarding how a collection of objects itself could stand as sensory representations of the participants' knowledge about empathy.

According to Bishop (1999) "collaborative storytelling uncovers the many experiences and 'voice' of the participants, emphasizing complexities rather than commonalities". The Sensory Storytelling method honoured the complexity and subjectivity present in the very human territory of empathy. The collective stories generated from the manipulation of the sensory objects facilitated the access of raw information in a way that designers can process and understand. By stimulating the senses we were able to facilitate communication, interpretation of abstract data, and understanding of complex human descriptions. The result of this experimental research was a design method with the potential to bridge communication barriers and foster understanding.

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Pain talking: exploring the experience, expression and description of chronic pain through creative processes and visualisation strategies.

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ABSTRACT

Explaining and quantifying the feeling and experience of living with chronic pain presents a particularly challenging task. Young people and children1 who suffer with chronic or persistent long-term pain, and their families or close support networks regularly describe difficulties in finding ways to effectively explain the experience of pain to others (Logan et al., 2012). This can lead to young people feeling different and misunderstood and can make it difficult to seek appropriate support. This project describes a pilot study utilising workshopbased creative activities to assist the process of describing and communicating what it is to have chronic pain.

Pain management programs work with young people to educate them on what chronic pain is, why it occurs and to identify how pain is personally affecting them. These programs generally use a multidisciplinary approach, routinely drawing on verbal discussions, paperbased information and visual and physical activities to collaboratively address the problem of managing chronic pain. Feedback shows that these approaches are helpful, with young people often feeling better understood during sessions and gradually within schools and their broader communities.

During the workshop, young people used creative techniques to describe their pain experiences and collectively reflected upon the methods in relation to how they might support current pain management programs. The research contributes to the field by utilizing a number of bespoke digital and analogue creative processes and visualisation strategies to explore if it possible to enhance the individual experience of coping with chronic pain by offering more accessible ways of explaining pain to others.

Keywords

creative pain management

INTRODUCTION

The research brings together researchers and pain management clinicians at Sheffield Children's NHS Foundation Trust and design research specialists in the Art and Design Research Centre at Sheffield Hallam University in a pilot study that explores how the use of creative activities might assist young people (adolescents) in describing and communicating what it is to have chronic pain. Young people who suffer with chronic pain regularly describe difficulties in understanding the entity of pain and how to explain their pain to others. These challenges can also extend to families and communities of care. The inability to clearly describe and communicate the pain experience can often lead to feelings of difference and of being misunderstood and difficulties in soliciting appropriate help or support. Current pain management programs use a variety of approaches, historically including paper-based information and verbal discussion to help identify how pain is personally affecting an individual, and to explore the components of the pain experience; what the individual can do about it (pain management strategies) and addressing pain explanation to others (communication skills and school/college advocacy). However bias towards paper-based activities and verbal discussion does not utilise the breadth of contemporary communication forms relating to children and young people who are likely to find the use of physical media and computer technologies as universally appealing. With this in mind the project has developed and employed a number of bespoke digital and analogue creative tasks and visualisation strategies to explore how it might be possible to enhance the individual experience of coping with chronic pain by offering more accessible ways of explaining pain to others.

The key areas of interest are listed below:

1. Connecting with children and young adults by utilising contemporary methods of communication and physical media as well as a language-based approach.

2. Enhancing the experience of coping with chronic pain by offering accessible ways of exploring the individual pain experience.

3. Offering more accessible and varied methods for explaining pain to others and eliciting effective help.

4. Offering an innovative process for representing outcome measures that is creative, visible and motivating towards self-management and self-efficacy.

5. To expand the potential methods to promote understanding and management of chronic pain within the 'community of care' including health and education professionals.

6. To allow care-seekers to personalise and communicate their own pain profiles.

The Workshop Activity

Following an inclusive design ethos (Manzini 2015), a participatory workshop was run with service users and their local communities to investigate the key difficulties in communicating and explaining pain for young people. Participants aged 14 -17 who were under the care of a Pain Management Service due to their experience of suffering with persistent pain worked with design and health researchers and paediatric pain management specialists to explore the journey of experiencing persistent pain and explaining to others. During the workshop, young people used creative techniques to describe their pain experiences and collectively reflect on the methods in relation to how they might support current pain management programs.

In these workshops a number of media forms - graphics, word walls, photographs, visualisations and making practices, and 3 dimensional objects – were used to explore which techniques might be useful in aiding the communication of pain. We also explored how the use of metaphor might be used in thinking about and sharing thoughts, feelings and behaviour related to pain and pain management.

Workshop Structure

The initial service user feedback session was planned on a small scale in order to develop the project idea. To be sensitive to the participants at this early stage of project development the participants who were invited had either finished or were in the later stage of their pain management sessions. 6-8 participants were invited to attend the workshop, with a total of 6 in attendance. Facilitation of the workshop was given by design researchers supported by paediatric pain management specialists and a PPI facilitator. Consultation with a broader range of professionals in health, education and wider community of care will form part of the second stage of this exploratory process.

The workshop activities took place within a prepared room at the partner university, with a separate room next door to allow space for participants to respond to some of the activities in private should they wish. Activities, as described below were set out around the room, and participants were able to choose which order to complete them in. Following the activities the young people were asked to rank their order of preference before a discussion was led by the PPI facilitator. The workshop was 3.5 hours long with a break for refreshments halfway through.

In Fig 1 table A. detailed outline of how the day's workshop activities were organized can be seen. In table B. a list of participant instructions on how to go about the different activities is indicated. The activities were divided up into two strategies ('A' and 'B') to test if the participants preferred to create ideas from scratch using supplied materials or respond using pre-supplied media and prompts. The questions used to collect feedback from the participants about the workshop and its usefulness can be seen in table C. Samples of the instruction cards designed for participant activities can be seen in Fig 2. And examples of some of the participant responses are shown in Fig 3.

A. Breakdown of workshop session:

Time	Activity	Overview	Resources
13.30-13.40 10 minutes	Introduction	Overview of session and introduction to participants	None
13.40-13.50 10 minutes	Warm up	Circles (4 minutes) Taboo (6 minutes)	Circles and Taboo
13.50-14.00 10 minutes	Exercise Introduction & Ranking exercise	Introduce the exercise, and get participants to rank initial order of preference	Ranking sheets
14.00-15.00 1 hour	Main exercise	12 stations to work around	Instruction sheets 6 Stations around the room
15.00-15.10 10 minutes	Break & voting	Refreshments whilst voting and ranking favourites.	Refreshments and cake Flipchart Markers Ranking sheets
15.10-15.50 40 minutes	Discussion	Discussion of the different mediums for explanation (See below for more info)	Flipchart Markers
15.50-16.00 10 minutes	Summary	Drawing the session to a conclusion	

B. Breakdown of activity-basic instructions

Medium	'A'	'B'	Resources
Words	What 3 words would you use to describe your pain?	Choose 3 words that describe your pain (or write your own on a blank sheet) from the options	• Pen & paper • Printed words • Blank word cards
Images	What does your pain look like? Draw it for us.	Use the pictures provided to create an image of your pain	• Pen & paper • Image cards
3D	Build your pain from play	Using the materials provided create a 3D version of your pain	• Play clay • Building materials
Digital	Use the App to show us what your pain looks like?	Using the bitstrip app to	• Ipad with drawing app • Ipad/computer with Bitstrip on
Metaphor	If your pain was a meal what would it be?	Use the resources here to	• Empty plate • Mood boards of food • Toy food
Sound	What does your pain sound like? Record it here.	Using the instruments provided record your sound for us.	• Dictaphone/ recording device • Instruments/ keyboard app

C. Discussion points:

Expectations:	• Review of rankings before and after
Preferences A vs B	• Which one did you prefer? • Can you think of other mediums that you might use?
The different mediums	• Which one was your favourite? • Which one was your least favourite? • Would you be happy to share both of these with the group?
Capturing and storage	• How would you capture or store these? • How would you want to share it with others?
Group	• How have you felt sharing in a group in this way?
Explaining pain	• Would you use different ways to explain your pain to different people? • How might you explain differently next time? • Would you use combinations of the different techniques

Figure 1. Workshop planning tables, A. activity structure, B. Activity instructions, C. Participant feedback questions



Figure 2. A selection of participant responses to workshop activities.

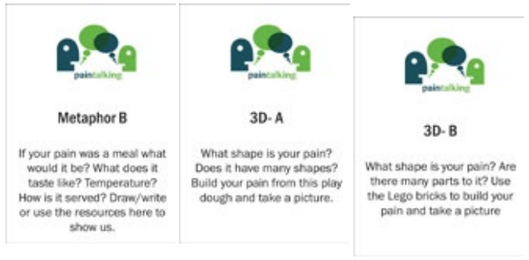


Figure 3. Sample workshop activity instruction cards for participants

Reflections and Feedback

This pilot project focused on a research-through-design study that explores how design practices might support adolescents in the self-management of their long-term condition. The workshop activities described above were followed up by participant interviews where a discussion around how they found the experience took place. Suggestions on potential direction for further study were collected. Participant feedback suggested that the process of developing personal pain explanation could be assisted by the provision of a variety of media but also provoked consideration that the language and methods that young people use to initially to explore pain explanation and understanding for their own benefit may not mirror the language and method through which they then choose to share information with others. This feedback therefore suggested that providing a variety of options to address both exploration and communication of the pain experience within pain management service provision could have significant benefit both for pain sufferers and for their support networks. Participants spoke of the need for different ways to explain pain to different groups such as friends and family, school teachers, strangers and medical professionals, and how a different media or a combination of the different medias might be used to support this. Potential further directions were suggested to explore these issues, looking at descriptions during the making as well as interpretations of the outcomes by others.

The participants and facilitators also reflected on the process of using different media to explain or describe pain and the final outcomes, who would benefit, and whether or not the meanings of the outcomes were transferrable to others. Conversation as to how the methods reflected the location of the study between two academic disciplines and how there is a need to be able to navigate through the conventions and languages of each discipline to allow the research to be relevant within them occurred.

Future Work and Conclusions

As discussed, explaining and quantifying the experience of living with chronic pain presents a particularly challenging task for children and young people. A further focus group is planned which will allow for more detailed exploration of the process and purpose of explaining pain including the collation of what young people see as the reasons for explaining pain within the different social groups they encounter and how this might subsequently influence the purpose and methods employed to explain pain. Within the influence of participant feedback further research intends to include a focus on the applications and development of computer-based imagery and interaction techniques to explore how representations of the multi-faceted impacts of pain can be created and personalised using digital technologies.

Two key strategies explore the importance of personalisation as an aid to engagement. The first strategy looks at the use of digital platforms including virtual world, web and mobile phone-based content that can be engaged with and shared by young people in similar ways to social media interfaces. It is hoped that the adoption of these conventions will encourage engagement by offering an accessible way of exploring the individual pain experience.

The second strategy will explore how pain experiences and management approaches might be captured utilising computer-based 3D visualization and printing techniques, wherein computer software and 3d printing are used to represent pain profiles and solution strategies are evoked by creating virtual and physical representations. These representations might be abstract or represent images of self, which could then be used to stimulate conversation, communicate concerns and track and record uniquely changing pain experiences over time (see Fig 4.) This will include further investigation into the use of metaphor and visual language as a way of thinking about and sharing thoughts and feelings around pain and pain management.

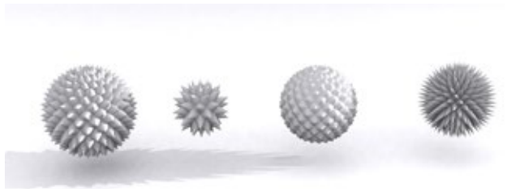


Figure 4. Experimental forms for visualising changes in pain profiles over time. (Computer model and image by Nick Dulake)

These techniques could also be used to represent recovery, changing self-image and selfmanagement strategies, and be effectively linked in to self-rating outcome measures which could yield both statistical and physical representation. Computer technology offers the potential for working with children and young people in an appealing, motivating and contemporaneous manner likely to facilitate enhanced pathways to recovery. Individually customisable visual representations of the identified components of pain (such as sleepdeprivation, loss of function, social isolation) and their relative size/importance can be combined on the computer screen to create revealing visual representations of the pain experience itself.

Computer generated visualisations offer children and young people the opportunity to explore and express their unique experience of pain through a familiar and contemporary visual language, which would also be more accessible to their peers. Digital visual representations can also be extended to represent pain management strategies and tools (such as pacing activities, relaxation skills) for example presenting the possibility of creating a conceptualised ‘pain management object’ which could be used during therapy sessions, shared and retained for ongoing reference.

The creation of virtual and printed visual representations of individual pain experiences offers the possibility for enabling its communication in a way that may be more tangible to others. It therefore offers additional explanatory tools which incorporate enhanced identification of components of the pain experience, including those that may benefit from the support of others (e.g. social isolation), thus presenting the potential for stimulating constructive discussion and eliciting more effective help. A tangible 3 dimensional representation of pain would also facilitate children and young people in seeing ‘the problem of pain’ as an entity separate from themselves and as such, something that can be more readily addressed by applying pain management solutions. This could be further enhanced by the creation of a personalised ‘pain management buddy’. Visualised representations of components of the pain experience and their relative size/importance could be linked to create self-rating outcome measures. For example if sleep deprivation were addressed by applying the pain management strategy of sleep hygiene, this component of the pain experience would shrink and could therefore provide measurable numerical data. When printed, the size of the pain experience would be smaller and therefore provide young people with a virtual and/or physical representation of their progress and be likely to engender greater motivation towards further self-management. Creating a number of sequential pain representations would facilitate the recognition of patterns and influences over a period of time and potentially contribute to areas such as understanding behaviors and individual empowerment. Collected visualisations could potentially contribute to the creation of a database accessible to service seekers, care providers and commissioners, with the opportunity to be shared with the broader community and replicated across other health systems.

The extensive uptake in mobile digital technologies especially with young people, and the rapid fall in the cost of 3D printing technologies make the possibility of creating personalized pain objects a real possibility. Biodegradable plastics which can be recycled also make 3d printing a sustainable option.

At this point there is minimal specific feedback to virtual representation and printing of pain experiences and the potential application and benefits as it expresses an innovative and newly emerging concept evolving in response to previous service user feedback and experiences as described. Therefore inclusive design strategies are central to the project in order to allow stakeholders to not only provide feedback on the project, but also to be directly involved in key decision points towards framing the direction and informing the progress of the work. How these visualisations can be used in different contexts (in therapy, at home) and over different time scales was also considered. Initial feedback on the use and impact of novel pain visualisation strategies and digital technologies has been collected. Findings from the research to-date will be shared on a dedicated website which will include guidance on how to undertake and adopt the use of pain visualisation/ printing in other pain management communities. Consultation with other professionals in health, education and wider community of care would continue to take place within the second stage exploratory process.

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Preparing for loss

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ABSTRACT

We live in a global and digital world with many inhabitants on the move, far away from their homes, friends and loved ones. Family and friends have always gathered for mourning and support, graves have been taken care of in generations. But today it´s hard to take care of a grave far away and for many, death has become remote. My interest as a graphic designer focuses on the role of typography and graphic design in mourning; typical manifesta-tions be-ing the traditional inscriptions in stone on cemeteries. I started exploring the possibility of ty-pography and graphic design supporting preparation for loss and mourning in a contemporary and future context of lives that are carried out across several places. I also wanted to enquire whether typography and graphic design could promote the ability to talk about death and loss in everyday life. This ongoing project has its base in the region of Småland, Sweden; with a small study also conducted in Hong Kong. The aims of the project are twofold: 1. To explore how design can help humans prepare for loss; 2. To explore how designers and mourners can design the funerals of the future with dignity and respect. Preparing for loss is vital not only in personal bereavement of loved ones, but also as we face unprecedented challenges to humanity, climate change, migrations – and loss of life as we know it.

Keywords
design, death, futures

INTRODUCTION

We live in a global and digital world with many inhabitants on the move, far away from their homes, friends and loved ones. Family and friends have always gathered for mourning and support, graves have been taken care of in generations. But today, “who takes care of and pays for a grave far away? For many, death is remote” (Theorell and Wästberg 2001).

My interest as a graphic designer naturally focuses on the role of typography and graphic de-sign in mourning; typical manifestations being the traditional inscriptions in stone on cemeter-ies. I started exploring the possibility of typography and graphic design sup-porting preparation for loss and mourning in a contemporary and future context of lives that are carried out across several places. I also wanted to investigate whether typography and graphic design could promote the ability to talk about death and loss in everyday life. This ongoing project has its base in the region of Småland, Sweden; with a small study also conducted in Hong Kong.

The aims of the project are twofold:

1. To explore how design can help humans prepare for loss;
2. To explore how designers and mourners can design the funer-als of the future with dignity and respect.

Methodology and Process

“Slowness negotiates today’s desires for both memory and pre-sentness by allowing us to re-flect on the now in all its complexity.” (Koepnic 2014). Could this notion be used in typography at funerals and memorial services in the present time of speed and movement?

The project started with explorations into typography in the context of death, mourning and the memorial grove. The question guiding this enquiry was: Can typography reflect the pro-cess of mourn-ing through use of alternative materials and processes? The idea was to create a site of mourning which would change over time. To this end, I experimented with decompos-ing typography and typography that gradually disappears by nature’s interplay. In the experi-ments conducted in what I termed my “forest lab” letters or names were ‘typeset’ using the materials of moss and beeswax, and photographed once every week. Simultaneously, I con-ducted interviews with two individuals aged 45-55 that recently lost a rel-ative, on the topic of future funerals. The purpose of the interviews was to start gathering insights into the experi-ence of contempo-rary mourning, and particularly in relation to conventional funeral services and manifestations of mourning. The first two small studies came together in booklets. In the-se, photographs from the material experiments in the forest lab are juxtaposed with quotes from the interviews with the recently bereaved.



Figure 1. Experiment with decomposing typography.

Thirdly, the project has drawn on collaborations with international Master students at the De-partment of Design, Linnaeus Univer-sity and Bachelor students at Hong Kong Design Institute who took place in December 2014. In workshops, we explored how future funerals might be conducted. The outcome was a series of postcards which students wrote from their imagined future selves and the imagined experience of a funeral in the year 2074.



Figure 2. Master student, imagined experience of a funeral in the year 2074.

At the time of writing, the booklets and postcards have just been used as a starting point for discussions regarding loss, death, mourning and typography with two key stakeholders: a funeral director and a conductor of civil funerals. The purpose of these discussions are to in-vestigate into the acceptance of various stakeholders of alternative ways of manifesting mourning, and more generally the perceived need for and possibility for introduc-ing loss and death in everyday life, as well as generating ideas, and concrete directions for my project. Now such discussions will take place with more stakeholders.

Findings and Discussion

On the occasion of the launch of the Department of Design’s new research platform, Curious Design Change, 16 October, 2015, I had the opportunity to collaborate in a workshop with re-search-ers invited from other departments and faculties of the university as well as people from the surrounding society as we worked in transdisciplinary teams to generate ideas for new research areas and projects. (See Tham et al. 2016 for a description of the pro-cess be-hind the research platform and this event.) This offered new input and perspectives on my research as we co-designed a future research area “SOFIA – opportunities in loss and death”. One of the questions I found most interesting was “how can we prepare for loss?”

I realized that preparing for loss is vital not only in personal bereavement of loved ones, but also as we face unprecedented challenges to humanity, climate change, migrations – and loss of life as we know it. It made me also reflect on how being more attentive to more trivial, everyday losses, can bring discussions about mourning more present, and perhaps less ‘ta-boo’.

The two studies that came together in booklets made me reflect on why funerals, mostly, are standardized and handled by busi-ness. Through interviews I learnt that the interviewees felt that funerals where expensive, followed the norms, and they were purchased when in a stressed state of mind. These people’s visions of future funerals were more personal, inex-pensive, loving and also joyful. My vision is that we are more prepared, know the options we have and can create our own, new ceremonies. During the project, I have had many informal conversations with friends and colleagues in Sweden on mourning and funerals, and am in-terested in the ‘finding’ that most people find funerals something you just have to “survive”. Funerals are experienced as stressful and uncomfortable. How can we make this last fare-well into something we feel more comfortable with and that is more meaningful? This brings up thoughts about rituals and processes earlier in our culture and how funerals are conducted in other cultures. Hoy (2013) has compared funeral rituals from all over the world and states that all cultures have five “anchors” in common: 1) significant symbols; 2) gathered communi-ty; 3) ritual action; 4) connecting to heritage; and 5) transition of the corpse. This will feed into my further explorations.

When analyzing the interviews with the recently bereaved, the postcards and the discussions with stakeholders I found that they all have one core thing in common – digitalization. They all imagine futures with digital funerals, ordering of funerals via the Internet, that mourners far away can participate via the Internet and even that the entire process will be digitalized. Other core themes are: the importance of dignity and respect, the importance of the small details, and connection to the starry sky – a recurrent image in visualizations of mourning. The anal-ysis of both texts and visuali-zations shows the colors most connected to death and sorrow in the order of: 1. blue 2. black 3. white, lilac, beige and yellow.

In the futures of Students’, some have moved to other planets or are living on a damaged earth but the main part are living on earth but under other circumstances. The undertaker, based in a small town in southern Sweden, referred to the large number of refugees in Swe-den: “the main challenge right now is all new ar-rivals who have their traditions, their ways”. The undertaker could see the importance of keeping your own traditions and “ways” in times of sorrow. Neither the funeral director nor the conductor of civil funerals could see a great need of decomposing typography at memorial groves. Their focus was on how to make death and sorrow easier to talk about with our close family and friends and the importance of dignity and respect.

Stacey Pitsillides, researcher of digital death, also: “…question whether this frantic gathering and saving of information is a

[1] I am especially grateful to Christina Mörtberg (Professor of Informatics), Cornelius Holtorft (Professor of Archaeology) and Jørgen Bruhn (Professor of Film and Litterature), all of Linnae-us University, for their contributions.

reflection on our culture's inability to deal with loss and morta-li-ty?" (2010). There are many digital examples concerning death, mainly from the US, reflect-ing the American culture. Some of these address preparations of your own death. The exam-ples I have found are very detailed - extensive forms to fill in, concerning ceremonies but also bank accounts, etc. Due to language, I have only been able to assess English speaking sources. A next step will be to engage a translator to widen the scope to, for example, Asian sources.

In response to these findings, I have made sketches of a digital service, Prep for loss, with (ritual) actions you can take to prepare for loss. This service addresses loss of a loved one, loss of your own life, loss of a pet or loss of an endangered species. The aim is that this ser-vice can be used in many cultures and also open up for discussions with close relatives on this sensitive topic. In the sketches I have sought to work with universal symbols in combi-na-tion with the core themes from the interviews and postcards. The next step is to investigate involving stakeholders if these symbols and the service make sense in this context of loss.



Figure 3. Sketch to a digital service using the core themes from the interviews and postcards. Image Credit: NASA

My work started with decomposing typography in the forest lab. From being afraid of death and talking about death I am now interested in further exploring this field with the goal to find where design can make a difference.

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Design for empathy within participatory design approaches

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ABSTRACT

The role of the designer is changing from the 'top-down' creative to the humble designer (Slavin, 2016), fostering collaboration with a range of stakeholders and partnering with other disciplines as the 'integrative discipline' (Teal and French, 2016). As such, a new consideration of empathy is required to creatively engage people in co-creation using participatory design approaches.

This paper discusses empathy within a participatory design approach, sharing methods and reflections of designing 'with' and 'for' empathy. The paper considers the role of the designer in engendering empathy in collaborative creativity, and illustrates approaches from applied projects in the health and care context. Experience Labs are a participatory design approach providing a space for collaboration where a diverse range of participants (ac-ademics, business, civic, end users) can collaborate in a creative process to explore and iterate concepts for health and care. The Lab methods, tools and artefacts are designed to move partici-pants through a series of designed spaces to provide them with the experience, skills and language required to critically reflect and evaluate emerging ideas. Collaborations are carefully curated to bring together the 'right' mix of expertise in relation to the project. The challenge is to ensure that relationships move quickly from 'them and us' to a collective 'we', as we explore ideas and build trust. The methods and approaches used to foster empathy will be shared, alongside previous literature on empathic design within user-centred approaches, highlighting the need to consider the ways in which we design 'for' empathy in participatory design.

Keywords

empathy, participatory design, collaborative creativity

INTRODUCTION

In the health care context, the value of involving end users earlier in the design process is becoming increasingly recognised, not only in relation to complementing the expertise of health profes-sionals (Entwistle et al., 1998), but also when using participatory design to enhance efficiency and usability of products and ser-vices (Bowen, 2010). There is a growing body of literature on the use of design approaches within health care (Chamberlain et al., 2015), and an increasing recognition of the value and contribution of design to innovate and tackle challenges in complex adaptive systems (Rouse, 2008).

The role of the designer is changing from the 'top-down' creative to the humble designer (Slavin, 2016), fostering collaboration with a range of stakeholders and partnering with other disciplines as the 'integrative discipline' (Teal and French, 2016). As such, a new consideration of empathy is required to creatively engage people in co-creation using participatory design approaches. We must consider how empathy is integrated within these design processes and the resulting role of the designer. Engaging deep empathy is an inherent design attitude, embedded in design practice and shaping how decisions are made (Michlewski, 2015). Designers can build empathy with end users and identify insights that can be translated into opportunities with the potential to address complex societal challenges. Empathic research practices move beyond traditional research approaches by engaging participants to become collab-orators, developing knowledge and understanding together with researchers, to produce effective products and services which are appropriate to needs (Thomas and McDonagh, 2013).

This paper discusses empathy within a participatory design approach, sharing methods and reflections of designing 'with' and 'for' empathy. The paper considers the role of the designer in the creation and embedding of empathy in collaborative creativity, and illustrates these approaches from a review of completed projects in the health and care context. The methods and approaches used to foster empathy are shared and discussed within the con-text of previous literature on empathic design within user-centred approaches, highlighting the need to consider the ways in which we design 'for' empathy in participatory design.

The Role of Empathy in Experience Labs

Experience Labs are a participatory design approach providing a space for collaboration where a diverse range of participants (academics, business, civic, end users) can collaborate in a creative process to explore and iterate ideas for a wide range of health and care contexts. Experience Labs were developed by the Institute of Design Innovation at The Glasgow School of Art and are a central element in the Digital Health and Care Institute, an Innovation Centre which aims to improve the delivery of health and care services in Scotland. Experience Labs function early in the design process to ensure that concepts are generated in response to identified needs from the perspectives of those who will become end users of products/services. The methods, tools and artefacts designed for the Lab are crafted to help move participants through a series of designed spaces to provide them with the experience, skills and language required to critically reflect and evaluate emerging ideas. Experience Labs are mobile, operating across Scotland, and involve creating temporary spaces conducive to the project context.

We have considered to date the role of tools and artefacts in communicating and expressing ideas between designer and participant (French, Teal and Raman, 2016), however we have yet to consider the empathic nature of the tools and artefacts and their role in building empathy amongst participants. Within the Experience Lab, we work with a diverse range of participants, which requires the development of a common language and shared understanding. Empathy in our work is therefore twofold: it is applicable to the way in which we create the experience for participants, i.e. how we design the Lab itself and the way in which we create the space to move participants through the design process; but also the way in which we design the space for participants to be able to empathise with each other. In early stages of collaboration this may involve participants sharing personal experiences, in order to reflect and create meaning from multiple perspectives (Wright and McCarthy, 2010), whilst building empathy. Sharing personal experiences can make participants feel vulnerable, and requires careful facilitation to create a safe space for sharing. The ability to empathise has been shown to be important for relationship quality by facilitating social competence and enhancing meaningful relationships (McDonald and Messinger, 2011). Promoting an empathic understanding within participatory design approaches can therefore enhance collaboration, and potentially have a positive influence on outcomes. Our challenge is to ensure that relationships move quickly from 'them and us' to a collective 'we', as we explore ideas and build trusting relationships.

Ideas for Experience Lab projects within the health and care context come from a range of partners who may be from an academic, business or civic background. Creating the conditions for empathy is highly important to ensure that the project partners can understand the perspective and experiences of the prospective users of their innovation. To foster empathy, partners are encouraged to attend Experience Labs and if appropriate, become participants during Lab activities. Involving a range of stakeholders in the Labs requires the development of a shared language among those who participate to ensure effective communication, bridging boundaries of difference and providing a shared focus to develop relationships throughout the process (Thomas and McDonagh, 2013). The resulting shared language that emerges through the Experience Lab contributes to the development of an empathic understanding among those involved and relies on values such as mutual respect, patience and acceptance (ibid).

Designing for Empathy

Designing for empathy has received attention through a discussion of empathy 'things', which can be mobilised to support and build empathy within the design process (Gamman et al., 2016; Mattelmäki and Battarbee, 2002). Designing for empathy in Experience Labs requires the researchers to find ways 'to elicit and understand human needs in order to translate them into tangible design outcomes' (Thomas and McDonagh, 2013). Cipolla and Bartholo (2014) argue that designers should strive for inclusion in their design process, rather than empathy, to achieve dialogue with end users. They argue that in enacting empathy, the designer (or in our case the participant) excludes their own experience and assumes (or presumes) what the other feels or experiences, rather than listening and entering into dialogue. In the context of Experience Labs, we argue that effective listening and dialogue requires empathy and inclusion: these concepts are not mutually exclusive. It is important to be inclusive of differing perspectives and empathy is required to understand and identify differences and synergies in participants' needs and experiences towards collectively designing an outcome that is inclusive.

Similar to pedagogical perspectives on empathy, researchers within the Experience Lab use attunement, decentring and introspection in order to build empathy (Arnold, 2003, cited in Seddon, 2004). The Labs are an emergent process similar to Participatory Action Research (Reason and Bradbury, 2013), where new communicative spaces emerge and participants engage in experiential learning. Attunement prepares participants for design activities, providing recognition and validation through 'mirroring' (Seddon, 2004). Through decentring, researchers are able to 'see things from another's point of view experiencing layers of thought and feeling beyond what might be immediately accessible' (ibid). Through introspection researchers can 'reflect on past experience to guide future action by working through stored, embodied and often unconscious memories to select significant ones' (ibid). For our participants, a key aim is to facilitate 'outrospection', to enable participants to better reflect on their experience by stepping outside themselves and exploring the lives and perspectives of others (Krznaric, 2015).

1) Knowing Our Participants

Previous research has described empathic design as a 'quality of designing but also a quality of designers' relating to ability and willingness (Kouprie and Visser, 2009). In our work, ability and willingness are also important factors to account for in relation to the way in which we design 'for' empathy amongst participants. Participants will have varying abilities in relation to empathy and will also have influences on their willingness to be empathic. As Wright and McCarthy (2008) highlight the importance of 'knowing the user' and describe approaches for building empathy with users for the purposes of HCI design, it is the role of the participatory designer to gauge the abilities and willingness of our participants to empathise, and design and structure the Labs to ensure we build empathy within the group for the purposes of collaborative creativity. As such, significant time may be spent in context gathering and getting to know our participants through interviews, home visits and engagements prior to the Lab. These activities rely on the empathic skills of the design researcher, and offer valuable insight into the perspectives, personalities, and interpersonal skills of the participants. Insights gained enable the Experience Lab activities to be tailored and bespoke to the participants, and to ensure balance and attunement within the group. Additional team members are briefed on the participants they may be facilitating: highlighting their background and interests, and any participants who may need encouragement or support to engage.

In some projects it is not possible to develop these relationships prior to the Experience Lab, perhaps due to resource or the availability of participants (e.g.Labs involving busy clinicians). Alternative strategies for building empathy prior to designing Lab activities have included ethnographic observations to understand the context within which our participants work (e.g. shadowing ambulance crews on their shifts). While this does not allow staff to gauge the willingness and ability of the individual participants to engage in empathy, it allows design researchers to empathise with their working conditions and ensure the activities build empathy between participants by tapping into common challenges.

2) Creating Safe Spaces

Careful consideration is given to creating the right conditions for empathy in participatory design activities, in order to ensure participants feel safe and comfortable to both share their experiences and ideas, and relate to others. Consideration of the qualities of the physical space chosen for the Lab, such as neutrality, openness, and neutrality of the space; the facilitation skills and attitudes of the design researchers, and the level of attunement within the group, all contribute to ensuring participants feel safe and can engage in the design process.

In creating a safe space for empathy among participants it is important that researchers develop an awareness of self and others, and have strong communication skills particularly in relation to careful listening and responding (Wright and McCarthy, 2008). Facilitation skills become increasingly important for empathy, particularly when participants are engaged in storytelling and the sharing of lived experience. Luck (2007) highlights the importance of conversational competencies when facilitating participatory design activities, in actively engaging user groups in the design process. Through experience, facilitators become skilled in communicating the purpose of the activity, actively engaging participants through appropriate questioning, humour, and recognising and encouraging suggested ideas (ibid). Introspection is key to empathic facilitation within Experience Labs, in considering how it might feel to walk into a room full of strangers and be asked to share personal experiences or participate in creative activities with no prior experience. Holding these thoughts and emotions at the forefront of the mind, can help facilitators to put the participants at ease. Facilitators build a safe space through carefully chosen language, listening and responses that communicate the values of participatory design, i.e. that participants are the experts in the context within which we are aiming to innovate, and as such every response is useful and valid. In addition, by carefully documenting each participant's suggestions using Lab materials and verifying understanding, facilitators can keep an accurate record whilst communicating the value placed on each contribution.

3) Methods and Tools

Methods employed at early stages of the Experience Labs often involve storytelling and scenario based tools through which participants can share and relate to other's experiences. Visual methods help to make these experiences tangible and communicate them to the wider group, and can aid in the processes of mirroring and decentring. Visual documentation can also provide a way to represent multiple layers of information and find a common language. Storytelling provides a way for participants to empathise with each other through sharing their personal experiences and can support empathy among diverse groups. Evidence for this comes from the use of video storytelling to share personal experiences between a group of mothers and a group of young people during a health promotion project. Mothers were video recorded recounting their experiences, which were then shown during a subsequent Lab with young people. On watching the video, young people commented that the authenticity and genuineness of the lived experience of the mothers gave them insight into an experience they had little awareness of, and thus increased their empathy with the mothers. Through the process of decentring, the young people were able to appreciate the perspective of the mothers on the health promotion topic and combine this perspective with their own to develop an awareness campaign targeted at young people. Fictional video storytelling has also been used to communicate a proposed new technology, using a design fiction technique (Blythe, 2014) to demonstrate how the technology would impact on every day life. Actors discussed their experience of using the technology, and they demonstrated it in practical use through a Wizard of Oz prototype. This technique enabled older patients to imagine themselves in the place of the actor, thus relating the concept to their own life, and giving useful feedback about acceptability and value prior to the development of the system.

Designers also use tools and artefacts to foster empathy within the Experience Labs. The tools and artefacts are carefully designed to embody insights that have been uncovered during contextual research. In one project, the analogy of piloting a hot air balloon was used to describe the challenges of living with a long term condition. Model hot air balloons were hung within the Lab space, as prompts to encourage participants to reflect and share their experiences of self management. Specific challenges identified through interviews with participants were written on sandbags and placed in the balloon baskets. Participants discussed each sandbag challenge in turn, sharing their strategies for and experiences of overcoming the challenge as meanwhile the balloon rose higher, representing successful flight (or self management). The tool enabled empathy to be built within the group, creating shared meaning, and learning from or affirming other's experiences. One participant extended the analogy to describe the challenge of the 'snake in the basket' i.e. instances where other challenges in life may have a higher priority and require more attention than piloting the balloon.

Personas are often using by designers to embody insights and build empathy with end users (Cooper, 1999). In the Experience

Lab, personas are often developed by the participants themselves, rather than generated by designers, with groups asked to agree on a name, background information, and discuss this person's thoughts, feelings and challenges. This approach is used as it enables participants to build empathy with the persona through imagining their thoughts and feelings, collectively construct a shared point of reference for future design activities, and importantly to safely share personal experiences by discussing them in the third person. As a result, the activity builds attunement between participants and a common goal in developing ideas to overcome the challenges identified for this person. These tools can encourage reflection, introspection and outrospection, building empathy amongst participants that results in a deeper understanding of the context and insights that lead to better design outcomes.

Whilst considerable time is spent in getting to know participants and contexts, and carefully designing and facilitating appropriate spaces, activities and tools, Experience Labs are discrete events that require flexibility and adaptation when challenges arise. Challenges experienced relate to recruitment of participants, willingness of participants to be open to a new way of working, and overcoming pre-conceptions and differing views so that ideas can continue to progress and conflict can become productive resolution.

Conclusion

In this paper we have shared our methods and reflections of designing 'with' and 'for' empathy in our participatory design approach, Experience Labs. We have explored the role of empathy in supporting collaboration through the application of attunement, decentering, introspection and outrospection processes in the Experience Lab approach. Applying these processes within the participatory design context, we have considered how Experience Labs enable these processes, and create the conditions for collective empathy. As such, we have discussed the role of the designer in building relationships and contextual understanding of participants, creating the conditions and designing artefacts to embody the insights gained as a way to open up the design process to foster empathy. Future research will consider the wider impact of our participatory design approach in building empathic capacity among participants, as part of a comprehensive study on the benefits of participating in Experience Labs.

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Open design approach, a project for inclusion of blind people

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ABSTRACT

The paper describes a colour experience approach transforming visual images into geometric, tactile and emotional inputs. The aim of the project is to create a colour code that may enable partially sighted and visually impaired persons to perceive, by means of a haptic exploration, the sense of colour, giving it a symbolic and tactile representation through a language that goes beyond idioms and cultures. Through an empathic relationship with the object and the perception of shapes and textures, the colour can be imagined together with the emotion it may convey. Following the principles established by Munsell – HUE, VALUE and CHROMA, the Colour Code was actually born out of the Braille Code, based on the composition of the six dots enclosed in a square, from which to develop specific geometric shapes, which are assigned certain values and characteristics. The Colour Code can be reproduced on different media and in various sectors: in furnishings - in order to identify the objects that surround us in our daily lives; in clothing, with a labelling system giving visually-impaired persons the possibility to be autonomous in choosing a garment; in education, through 3D illustrations that may help children learn to match colours to objects; in illustration, reproducing works whose chromatic composition could not be otherwise perceived. This approach based on dialogue and on the listening experience, in collaboration with non-profit associations, blind people and experts, helps understanding the other, conveys values, and leads towards social change and social integration.

keywords

social design, social inclusion, empathic product

INTRODUCTION

The paper describes a Design experience carried out in collaboration with an association of visually-impaired people, which shows the importance of working on shared design paths that may develop a sense of belonging to the process and an empathic relationship with the product.

Empathy is meant as listening to the other, as the ability to cooperate. In J. Rifkin's words, empathy is the red thread that weaves a population that is becoming more and more varied and individualised into an integrated social tapestry, making it possible for the social organism to function as a whole.

Through a design approach open to dialogue, to the sharing of experiences and the integration of competences, it was possible to create a strong synergy and to set up a close, highly motivated working group to carry out the project. The exchange of different competences has made up the environment where to formulate, share, design and test the demand for innovation. The needs of visually impaired persons have been analysed and discussed in ad hoc meetings, with a view to identifying possible areas of application of design methodologies.

The Open Design Approach

The past few years have witnessed the spreading of design approaches based on the sharing of processes and on the validation of solutions together with the communities of stakeholders. The evolution of some design research focusing on the potential of collective creativity has analysed different degrees of participation and involvement of people in the design process.

The evolution analysis of the main sharing design approaches in which empathy is one of the most important elements able to create a connection with the people involved in the activities, shows the importance of working on shared design paths.

Based on the Human-Centred Design approach, which rests on the interpretation and translation of the users' needs into a project and generates products and services that may adapt to the individuals' abilities, the communities' participation in the project has been experimented in many different forms. This evolution has been clearly affected by the spontaneous phenomenon of diffuse design, expressing a growing interest in common good and the will to be involved in the strategic and operative choices that determine community life.

According to Ezio Manzini, the social and radical 'waves of innovation' are the expression of our time and follow trajectories that are not distinct, but integrated (Manzini E. 2015). These trajectories lead to three different phenomena: the consolidation of so-called creative communities – organisations that lead towards ethical and sustainable attitudes and find bottom-up solution to social problems; the spreading of diffuse systems – a scenario in which an open, peer-based production develops; and finally, the sharing of new forms of organisation and information implemented by means of digital platforms.

Hence diffuse design is generated, on the one hand, by the participation, aggregation and collaboration of people and, on the other, by the support of design experts who can guide, interpret and facilitate the design process. The complex, at times contradictory process of co-design entails the construction of networks including several actors - institutions, businesses, communities, organisations and designers, which, in order to communicate, need to develop and share communication codes.

The co-design approach involves the user communities in the project directly, thus creating new design scenarios and new competences, which are essential to the spreading of collective creativity (Sanders, Sapper, 2008). A co-design process can bring to light needs and latent needs around which to develop design ideas, sharing and validating the process steps, and above all, it can enhance dialogue, with a view to reaching a common goal.

In the process that was developed for the project described below, a few stages and actions were identified leading to the establishment of a common language and helping to establish an empathic relationship among the members of the working group.

The approach taken is composed by three phases, Research, Working group and Project; it has been iterative collaboration with blindness people, third sector operators, designer and experts.

Thanks to meetings, disease analysis, interviews and workshops, the first phase of research identifies the main elements necessary to understand social issues and the priorities of blind people. Different sharing activities led to defining the best way to establish a common language and to create the right conditions for an empathic relationship among the people who take part in the group. In order to understand the blind people's memories of the colour, the method used to convey a colour's perception and its role in daily life, objects of different shapes and textures were submitted, followed by a description of all the sensations generated by touch with the object.

The second phase, working group, aims at developing mutual knowledge, and investigates the human capital involved in the project by identifying the competences available and sharing the background of experiences. It is in these sessions that the real interest of the group in the project topic, as well as the sense of belonging and participation in the experience appear. Through the observation sessions, including conversations with psychologists, welfare wolkers and educators, it became clear the utility to know the colour for blind and which are the areas in which is possible generate new solutions. During the activities there was a constant exchange with professionals such as typhlology experts and with visually impaired individuals who could share the needs, attitudes and reflections concerning their everyday lives. The educational-pedagogical issues of vision impairment have been analysed thanks to the contribution of an expert in (pedagogical and didactic) typhlology, the discipline that studies the issues and educational strategies of visually impaired subjects.

Developing the autonomy of a visually impaired person entails making their environment familiar. Hence the educational and pedagogical methods, by means of teaching tools, explored the need to transfer the perceptions of space.

The third phase, project, concerns the sharing of visions in which to develop common solutions (framing a vision and a scenario for possible solutions). The generation and selection of the idea originates from the development of a first set of draft concepts, viewed as an area of opportunity and possibility, in which the most effective solutions will be implemented based on the inputs generated in the conversations. The idea-generating process brings together experts, stakeholders, non-profit associations and users, who have been also involved in the prototyping stage. Following the prototype testing, actions must be developed to identify the fields of application and experimentation of the project.

The first application of the project was in the educational field and it is a didactic tool for children.

The Co.Code Project

The project originates from the assumption that the human interest in thinking and representing reality is closely related to the way in which it is experienced.

So the aims is not only to name colours through sensory experience, but to convey the trait of the object related to colour (luminous intensity) and also the relationship between colours (shades, combinations).

Traditionally, it is assumed that the mental image is the child of the visual image, hence a mind deprived of this experience cannot contain any image. In their sensory experience, the visually impaired manage to master a concept, thus making up a mental representation of it. For a seeing person, touch is not the first sense of reference: as a matter of fact, 80% of the information passes through sight. It should not be assumed, however, that the visually impaired must only experience the world through the remaining 20%, as in fact their attention is more focused on all the other senses. Of these, touch is the sense that enables them to have a direct contact with reality.

To a visually impaired person, much of the information becomes accessible through Haptic perception, that is to say the process of object recognition that takes place through touch and derives from the combination of the tactile perception of the objects on the skin surface (shape and texture of the objects) and proprioception, which is given by the hand's position with respect to the object. Regardless of how space is perceived, each sensory organ draws some specific qualities. While in a seeing person there is a collaboration of the visual and tactile perceptions, meaning that the data from both integrate and complete each other, in a visually impaired person the haptic perception is predominant.

The concept aims at transforming the colour experience into sensory perceptions, turning visual images into geometric, tactile and emotional images. The aim of the project is to create a colour code that may enable partially sighted and visually impaired persons to perceive the sense of colour by means of a haptic exploration, giving it a symbolic and tactile representation through a language that goes beyond languages and cultures. The colour code creates empathy with the user, and can be perceived not only by those who can touch it but not see it, but also by those who can see it but cannot 'perceive' it. Through an empathic relationship with the object, and the following perception of shapes, textures, and feelings, not only the colour can be imagined, but also the emotion it may convey.

Following the principles established by Munsell – HUE, VALUE and CHROMA, each will be expressed through a language that can be recognised to the touch. The Munsell system is a colour space used as the international standard to define colours based on three dimensional coordinates: shade (Hue), brightness (Value or Lightness) and saturation (Chroma). Munsell determined the spacing of colours along these dimensions by measuring the human perceptive response to colours. The colour code was actually born out of the Braille Code, from the composition of the six dots enclosed in a square, from which to develop specific geometric shapes – six tetrahedrons, equal in pairs, which are assigned certain values and characteristics.

Each composition of such shapes will represent one Shade. The colour's brightness will be perceived based on the height of the geometric composition, expressed in three levels: high, medium, and low. Based on the degree of depth that the user perceives at the touch, they may define its brightness. The colour's saturation is expressed based on the composition of the texture on the geometries, and represented in three levels of perception: thick, regular, and thin. The thicker the texture, the more saturated the colour. (Fig. 1)

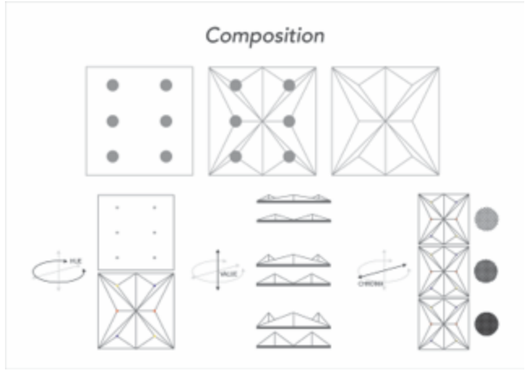


Figure 1. Color Code geometric shape system.

From the composition of the six basic shapes, at medium height and regular texture the three primary colours and the three secondary colours will be derived. From these three primary colours and the three secondary colours a range of twelve colours will be obtained by varying the Hue, modifying its depth in high and low. By composing the three primary colours, the three secondary colours and the twelve colours obtained by modifying the heights, a range of another 36 colours will be obtained through a variation of the Saturation, and the following variation of the texture through a thicker and thinner perception. (Fig. 2)

The Colour Code can be reproduced on different media and in various sectors: in furnishings, in order to identify the objects that surround us in our daily lives; in clothing, with a labelling system giving visually-impaired persons the possibility to be autonomous in choosing a garment; in education, through 3D illustrations that may help children learn to match colours to objects; in illustration, reproducing works whose chromatic composition could not be otherwise perceived.

The Colour Code can be used in various fields of application and on various media of different sizes. In the area of furnishing, it will be possible to identify the objects that surround us in our daily lives and make the perception of environments more thorough. In the labelling of garments and accessories, informed purchases will be possible, as the colour code on the garments can help in the purchasing process and become a mark of identification for colour reading, in a way that is globally understood and is not language-mediated. Thanks to the code on garments, visually impaired persons can be autonomous in choosing their clothes, as they will be aware of the connections existing between the various colours and will not need any external help. In education, by means of 3D illustrations the children may learn to match colours to objects and, when the code is used on toys, the teaching of colours will become a playful moment.

The first application of the project, that was tested and validated with the contribution of Unione Italiana Ciechi, aimed at teaching the colour code to visually impaired children. Didactic tablets were created: three tablets, each representing a texture and the three compositions of tetrahedrons, in three different heights, so as to obtain a range of 57 colours. Thanks to the tablets and the support of typhlologists and social workers, it will be easy to read the code and make it part of everyday life. (Fig.3)

The design phases have been supported by an approach studying visually impaired persons in everything that surrounds them, from space to colour perception. The exchange with those who experience this daily condition has brought to light several society stereotypes, highlighting the need to define and name colours. It became clear that it is not so important to define a colour as such as to establish connections between the objects that make up the living environment and the people who live in it.

The aim of the project is precisely to make it possible to identify the links existing between colours, thus turning colours into an identity factor with which to establish an empathic relationship. The aim is to transform an image and a visual experience into a sensory, empathic one, which may be recognised by anyone, beyond any disability or language barrier. The spreading of the code makes it possible to include a class of users who cannot currently be and feel autonomous, through an experience that may become a reference for those who use it.



Figure 2. Color Code colour's composition by varyinf the Hue, Value and Chroma.

Conclusion

The design actions, realised by a collaborative and open approach, help creating an empathic relationship between designers and the society. This shared approach based on dialogue and on the listening experience helps understanding the other, conveys values and leads towards social change and social integration. The dissemination of co-design projects enhancing the collaboration of differently abled persons, non-profit associations and designers aims to collect the following results: activate a dialogue among different parts of the society that recognise the value of human experiences and abilities as a point of reference for the development of the co-design process; experiment with new forms of cooperation to support collective creativity, overcome cultural and social differences and promote a greater knowledge of diversity; develop empathic objects for the promotion of social change.

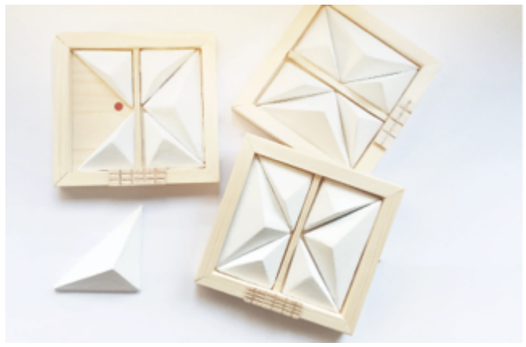


Figure 3. The first application of the project: Didactic tablets.

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Participatory social design with empathy for the poverty alleviation in rural

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ABSTRACT

This paper seeks to explore approaches to promote mutual empathetic understanding of each other among various stakeholders during the process of promoting rural industrial development (poverty alleviation) through participatory design. This research is based on an empirical case study of a one-year-long ongoing project, which aims to alleviate poverty drawing on indigenous resources in a Chinese rural village. The multi-disciplinary project team included designers from Universities in China and Europe, design practitioner of various fields from Korea, UK and Iran, various levels of local governments, local cooperatives and residents. The paper analyzes the conditions and concerns of various stakeholders and how to gain an empathic understanding of each stakeholder during the participatory design process. The following conclusions can be drawn:(1) Design practitioners and researchers have been paying increasing attention to the social value of design besides its economic value. Correspondingly, the attention of 'empathic design' has shifted from explorations of everyday life toward social issues, from the experience of individuals to the conditions of communities as a whole. (2) Design-driven rural development should be premised on an in-depth knowledge of local culture and resources, and on an empathic understanding of the concerns of various stakeholders. Designers should serve as a facilitator to get each stakeholder involved in the process, especially local residents, and the knowledge, expertise and willingness of each stakeholder should be fully respected and made full use of. However, designers should also play an important role as a communicator, persuader and educator in training key participants when necessary.

Keywords

participatory social design, design empathy, rural poverty alleviation

INTRODUCTION

Alleviating poverty in rural communities has aroused the interest of and remained a challenge for different disciplines. Past practices have shown that design has the potential to help alleviate rural poverty, such as co-designing creative products based on local techniques and resources with local craftspeople, multimedia design for preserving and promoting indigenous cultures which attracts outsiders to visit and consume in local places, and product and service design for promoting local tourism industries. Such endeavors to improve local welfare may prove effective to some extent, yet the following questions crop up: these practices (1) lack of holistic thinking-not fully integrating key stakeholders (especially local residents), with no or only part of locals receiving real benefits and failing to solve local issues from a systematic perspective; and (2) lack of empathetic understanding of local socio-cultural contexts-ignoring the different needs, capacities, poverty levels and other conditions of community members.

Design empathy is a skill often mentioned by leading human factor specialists and designers. It has two directions: towards the participants to create an empathic and respectful dialogue and towards the designers to support empathic understanding [1]. Empathic Design is built on a long history of human-centered design. However, the notion of empathy as grounds for design has a shorter history that goes back to the writings by Leonard and Tayport in marketing [2], to Patrick Jordan's work in Philips [3], to Liz Sanders's work at SonicRim[4], to Jane Fulton Suri and Alison Black's work in IDEO[5], and to the notion of user experience [6]. The development of empathic design has occurred at several levels. Early on, relative research focused on elucidating experiences in an interpretive manner and assumed that the closer the designer comes to the real user, the more easily the designer can step into the user's world. The more the designer can live and experience the user's emotions, the better he/she can transform the ideas and constraints into appealing and pleasing design solutions [7].The main drivers for this type of research came from the IT industry, and inspiration came from places such as the MIT Media Lab, IDEO, Computer-related Design at RCA, and work at TU Delft [8]. Research trend began to shift from products and interaction to systems and services around 2003. The boundary between a user and a designer was no longer clear. In response, empathic design shifted from user-centered design toward co-design, where people express their experiences in the design process [9]. Although it had advanced designers' understanding of people in many ways, empathic design could run into what can be called "empathy trap", namely, the attempt to be empathetic might

articulate popular reflections innovating more radical futures. Roberto Verganti has recently and forcefully argued that the best designers not only listen to people but also follow their own reasoning and instincts. Designer-based imagination has been at the base of empathic design[10]....The focus on imagination has added flexibility to the empathic program and turned it back to rely on competences that are built on design's more expressive sides.

Generally, the attention of empathic design has shifted from explorations of everyday life toward social questions and services. This transition reflects the development of design as a discipline. At the 29th General Assembly in Gwangju (South Korea), the professional Practice Committee unveiled a renewed definition of industrial design, which values not only the economic impact of design work, but also its social impact. Especially, how to promote rural development through participatory intervention has been hotly discussed.

Thus, the connotation of the concept "empathic design" has already been expanded. The target of empathic design is no only individuals but also rural community as a whole. The boundary between professional designer and users/customers has been blurred and we are entering an age of co-creation when "everybody designs" as suggested by the social innovation specialist Ezio Manzini [11]. Relevant researches on empathic design have been geared to finding ways to inspire and sensitise not only designers, but also other stakeholders.

Against this background, this paper seeks to explore approaches to promoting mutual empathetic understanding of each other among various stakeholders during the process of promoting rural industrial development (poverty alleviation) through participatory design.

Analysis of the Project

This research is based on an empirical case study of a one-year-long ongoing project named TAO HUA YUAN, which aims to alleviate poverty drawing on indigenous resources in Saiyang Village, Taoyuan County, the City of Changde, Hunan Province, China. One of the top leaders in the Changde Municipal Government invited us -the design team from School of Design in Hunan University- to carry out this project. The multi-disciplinary project team includes designers from Universities in China and Europe, design practitioner of various fields from Korea, UK and Iran, different levels of local governments (village, county, and municipal), local co-operatives and local residents. The stakeholders concerning local development consist of (1) design specialists from Hunan University (outside experts), (2) local community including local residents, village leaders, and a village economic cooperative mainly engaged in B&B businesses, (3) governments at the municipal, county level, and one governmental official designated by the municipal government to reside in the village for a long term to lead the poverty alleviation work, and (4) others including one company making tourism souvenirs, one social entrepreneur who lives in the village for a long term and runs a blackberry plantation, as well as tourists (Figure 1).

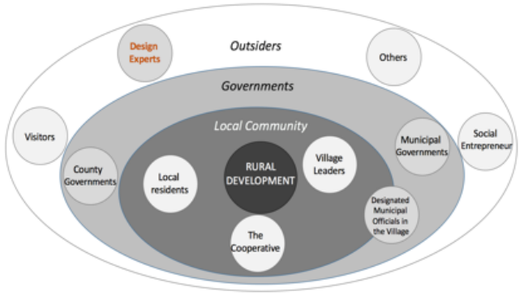


Figure 1. Stakeholders and Relational Map

To gain a larger view into the lifestyles of people and facilitate a better understanding of people's experiences, more traditional user study methods e.g. observation and interviews can be supported with other approaches[12]. Sanders divides user research into three areas according to the focus and the kind of information that can be acquired with the methods: 'say', 'do' and 'make'. 'Say' and 'do' relate to interviews and observations. The 'make'-tools are physical or visual aids to allow people to visualise and describe their experiences, expectations and dreams[13]... According to Sanders these categories should be explored simultaneously to achieve an empathic understanding of the users, or local community-the main beneficiaries of this project in this paper. The main process of gaining an empathic understanding of local community can be summarised as follows:

Local Culture and Resources

It is imperative to obtain an in-depth knowledge of local culture and resources through field survey widely employed in sociological and anthropological investigations for promoting regional development. Given the limited time, the field survey mainly investigated industrial resources, such as the operation of local B&B businesses or tourist accommodations, agricultural produces, and domestic animals. Local agricultural products include wild tea trees and bamboos rampantly growing in local mountains, black chickens and pigs that are characteristic of this region and given by the cooperative freely to many villagers for breeding, selenium-rich rice and other crops, and blackberry introduced to this village by the social entrepreneur. Local specialties include dry bamboo shoots, smoked pork meat, lei Tea with snacks unique to this region, pickled and salted vegetables. The team firstly got a rough idea of this information through interviewing local residents and observation. Meanwhile, local crafts, not only in this village but also in the neighboring regions were investigated, such as bamboo weaving, Tao Yuan Embroidery, and Tao Yuan wood carving. Crafts are very significant, if not the most, potential resources in promoting rural development and community empowerment[14]. More detailed and comprehensive information about industrial resources, however, could only be obtained through interviewing village leaders and the five co-founders of the cooperative, such as the output, sales, planting and breeding period, labor input of agricultural produces and domestic live stocks, and the operation of B&B businesses. They were not only interviewed orally but also were given a form to fill out concerning local industrial conditions so that they could have sufficient time to ensure the accuracy of the information.

Local villagers and our team members were invited to draw a map of the village where important spots of this village should be emphasised (Figure 2). There are the following benefits for the map drawing: (1) the drawers' recognition of local spatial resources can be visualised from the drawing. The residents' drawings and designers' can be compared, which reflect the similarities and differences of their recognition of local resources. The findings will go a long way towards further efforts to choose the site for public buildings and facilities, such as communication center, and low-tech manufacturing center. (2) local residents and designers can communicate with each other in a casual way in the process of drawing. Many local residents initially were reluctant to draw and told us they were not good at drawing. It turned out that they could draw good (though not perfect) pictures under our guidance which provided us rich information about their recognition of the village space. Village map drawing assisted in enhancing community ties and the locals' recognition of indigenous resources.

Conditions of Local Residents

The project is aimed to alleviate poverty in this impoverished village and thus it is significant to know the exact poverty conditions of local residents. The municipal governmental official designated to reside in the village and two top village leaders are good sources for such information as demographic information, financial conditions (e.g. annual income, and income sources), the reason causing poverty, and photos of housing conditions.

Besides the basic information mentioned above, more detailed knowledge of local residents' conditions concerning local industrial promotion should be gained, such as their willingness to join our team to promote local industry, their capabilities and possible contribution to the team (e.g. handicraft skills, the skills of making local specialties, the skills of cultivation or breeding domestic live stocks, and tourism business skills). One way to get this information was to interview local residents one by one which could be really time-consuming; yet the design team from Hunan University were also engaged in heavy school work and thus could not do this work by ourselves. Finally, we chose one alternative way, namely, asking the local operative to gather this information through a form provided by the design team. The operative had inherent advantage to do this work as they had a close bond with local residents and a deep understanding of local situations. This work would help the design team to determine the various forms of local residents' participation in the project.

Moreover, governments of various levels are good sources of relevant governmental policies and programs to help the poor fight poverty. For instance, the team were informed by the governmental leaders of the government's preferential financial policies towards poverty-stricken farmers, which is really beneficial for local industry promotion. Upon knowing this, we suggest local residents apply for the Microcredit Loan for Poverty Alleviation to join the cooperative for a joint effort to seek economic success. Meanwhile, the design team cooperated with the local cooperative to apply for a key governmental fund for industrial development with strong support from the county and municipal governments. Thus, with a mutual empathic understanding of the role of different stakeholders, each party could work complementarily to achieve the same goal-poverty alleviation-under the facilitation of the design team.



Figure 2. Village Map Drawing by outside designers and Local Residents

Planning

Several seminars were held by the design team to discuss the planning of promoting local industrial development, in which various stakeholders were fully involved, such as governmental officials at the village, county and municipal levels, co-founders of the local operative, the design team, representatives of local residents and so forth (Figure 3).



Figure 3. Seminars with Stakeholders Discussing the Planning of Industrial Promotion

Based on the discussions in the seminars, the design team proposed a holistic planning of industrial promotion, which includes: (1) establishing the brand of local agricultural products; (2) establishing the brand of local Eco-tourism; (3) community education aimed to teach local residents handicraft skills, the skills of making local characteristic food, etiquette for tourism, e-commerce, agricultural knowledge and skills, and so forth; (4) establishing online platforms including a website, an app and a wechat platform to publicise local culture and sell local products (Figure 4).



Figure 4. The Interface of Online Platforms

Co-creation

Based on the discussions in the seminars, the design team proposed a holistic planning of industrial promotion, which includes:

(1) Establishing the Brand of Local Agricultural Products

As mentioned above, this village is recognised for its rich natural resources and agricultural products. Nowadays, the agricultural products in this village are mainly sold by the cooperative without well-designed packages. Thus, the design team decided to design featured packages from local natural materials (e.g. bamboo, and straw) based on local handcrafts (e.g. bamboo weaving, straw weaving, Tao Yuan embroidery, and Tao Yuan wood carving).

As Ezio manzini (2015) suggests, a new generation of sociotechnical systems-distributed systems- have emerged, which consist of sociotechnical systems that are scattered in many different but connected, relatively autonomous parts, which are mutually linked within wider networks. Designers are suitable facilitators for interlinking different distributed systems [15]. Thus, the handicrafts chosen for the package design were found not only in this village (bamboo weaving), but also from the neighboring regions within the same city (Tao Yuan wood carvings, and embroidery characteristic of the City of Changde). The design team even paid a visit to the recognised craftspeople skilled in bamboo weaving and dyeing and grass weaving in other places in western Hunan Province and Zhejiang Province in order to gain an in-depth knowledge of relevant handicrafts.

In the participatory design process, the designers were mainly responsible for generating ideas. Such natural materials as bamboo, bamboo shoot skin, straw were used and motifs from Tao Yuan embroidery were employed (Figure 5). Several seminars were held to gather feedback from local residents concerning the package designs. Local residents had different opinions towards the design works, the co-founders of the operative preferred simple packages using modern plastic or paper materials as the packages with natural materials required more time and cost and they wanted to make fast money. The municipal governmental official residing in this village and the village leaders, however, showed a preference to the package designs made from natural materials and with rich local cultural elements; they contended that the brand of local agricultural products and specialties could only be established with high-end packages and also the production of high-end packages could provide more job opportunities for the locals.

The design team certainly agreed with the leaders yet the opinions of the cooperative co-founders should be also respected as they were our main customer. Thus, we made a compromise to design both simple packages and high-end packages with natural materials afterwards. Actually, we should made compromises all the time during the design process. Local leaders and the cooperative co-founders often changed their ideas. The reasons lie in the following: (1)they often pay a visit to other places to learn how to promote local industry and they want us to copy what others are doing (e.g. they wanted us to design tourist souvenirs after visiting one tourist spot); (2) agricultural products were harvested at different times and upon each harvest, they requested the design team to quickly change current work and design packages for the new harvest, with little regards to our design schedule and no notion of systematic planning; (3) Governmental officials in China have a fixed term period and they intend to achieve success as soon as possible. Thus, sometimes, they prefer fast design works to good quality ones.

In the face of all the difficulties mentioned above, the design team managed to make a balance: trying to maintain an empathic understanding of their concerns while doing our work in a systematic way and always trying to persuade and educate them based on our expertise. The fortunate thing is that we could always reach a consensus through effective communication.

The design team intend to get local residents fully involved in the production process. Local residents are expected to participate in the process in different ways: some will do the production work (e.g. bamboo processing and weaving, straw weaving, bamboo skin processing and weaving); some will make local specialties; and some will produce agricultural products. As mentioned earlier, the design team asked the cooperative to conduct a survey on the locals' capability and their willingness to participate in the co-creation process. The conditions and intentions of the locals will be fully respected, yet sometimes persuasion work will be needed to encourage those who fear changes and risks.

Local residents will be trained by skilled craftspeople we invite to master relevant handicrafts and the design team will conduct experiment on the time local residents require to master one technique. For instance, they will learn different methods of bamboo weaving, and the time of learning will be recorded. The choice of final designs should take time, cost and aesthetics into consideration comprehensively. The project is underway and will enter the production phase soon.



Figure 5. Package Design with Local Natural Materials and Cultural Elements

(2) Establishing the Brand of Local Eco-Tourism

The project team has proposed a holistic planning for the promotion of local eco-tourism industry, which includes: (1) re-designing local buildings constructed with modern materials (cement, bricks, white ceramic tiles and stainless steel) and thus lack of regional characteristics-natural materials such as bamboo, and grass will be used to decorate the façade of those buildings, such as B&B business buildings, community center, and houses along the main village road; (2) re-designing landscapes, such as navigation signs, main road, the environment around a local lake, and road lamp; (3) Service and business model design: local residents will get involved in the eco-tourism industry to the greatest extent (Figure 6).

In this phase, designers should communicate with governments at various levels for the smooth development of this project. The Urban and Rural Planning Bureau of the municipal city is in charge of planning the construction of all the buildings and landscapes in this region. The problem of the bureau lies in its bureaucratism, old minds, its divorce from reality, short-sightedness and eagerness for instant success. For instance, in a governmental poverty alleviation program named Relocation of the Villagers Living in Dangerous Old Houses, the Planning Bureau arbitrarily designated a relocation place along the main road. It was an easy decision to bring the scattered residents together in a concentrated place. Yet, this arrangement would destroy the beautiful scenery of the village and make the main area of the village really crowded. According to the aforementioned village map drawing activity, local residents have deep feelings towards the areas along the main village road, which is the center for community communication and economic production. Planning relocated residential area here is by no means a good choice. Fortunately, the top municipal leader who invited us to carry out this project was not satisfied with the planning of the Planning Bureau. More discussions should be held for the re-design of local buildings and landscapes.

Conclusion

Findings

Based on the aforementioned analysis of the participatory process, the following conclusions can be drawn:

1) Design practitioners and researchers have been paying increasing attention to the social value of design besides its economic value. Correspondingly, the attention of 'empathic design' has shifted from explorations of everyday life toward (rural) social issues, from the experience of individuals to the conditions of (rural) communities as a whole.

2) Design-driven rural development should be premised on an in-depth knowledge of local culture and resources, and on an empathic understanding of the concerns of various stakeholders. Designers should serve as a facilitator to get each stakeholder involved in the process, especially local residents, and the knowledge, expertise and willingness of each stakeholder should be fully respected and made full use of. However, designers should play an important role as a communicator, persuader and educator in persuading and educating certain stakeholder when necessary. For instance, the conflicts between designers' systematic thinking and governments' and local community's short-sightedness occurred frequently.

Limitations and Further Research

The project is still underway and thus this paper is merely a summary of the work that has already been completed, namely, the planning and ideation phase. During the following phase of production and construction, more research needs to be done concerning how to distinguish the common interests and conflicts among the stakeholders, how to gain an empathic understanding of key stakeholders and how to make a balance and compromise without hurting the key principles of the designers in the participatory design process.





Figure 6. Current Conditions of Local Buildings and Investigation for the Redesign Work

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Empathetic design research and development in practice; co-development of an innovative head and neck support for people with Motor Neurone Disease

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ABSTRACT

People with Motor Neuron Disease (MND) can experience muscle weakness. The human head can weigh 5kg so when this happens in the muscles around the neck it can become very difficult to hold the head up and can result in the head falling forward. The situation can lead to extreme pain, restricted movement, problems with eating, drinking, swallowing, and breathing and importantly adversely affect face-to-face communication. Ideally, a neck collar would help alleviate these important quality of life (QoL) issues. Current neck collar provision can be of limited use for people with MND and are regularly rejected by users as often they are designed to immobilise the head and neck, and can be socially stigmatising.

A fundamental reappraisal of the way these physical products are configured and used was undertaken. The project explored the use of open and empathic approaches to the co-design of solutions and further product designs role as developer and explorer of complex multidisciplinary, social and QoL issues. It demonstrates experts working openly together using a range of ‘live’ research practice methods to arrive at holistically considered optimum outcomes.

The project was funded by the NIHR i4i program. The team consisted of clinicians and health care practitioners, engineers and designers working with partners including people experiencing MND and their carers. Processes included a range of research through design methods at the heart of which was a series of ten, iterative, co-design workshops. The team developed mutual empathies between project participants. These played a key role in the motivation to reach appropriate solutions.

Keywords

empathetic design, products, health, methods

INTRODUCTION

People with Motor Neuron Disease (MND) can experience muscle weakness and, with the human head weighing around 5kg, when this happens in the muscles around the neck it can become very difficult to hold the head up resulting in the head falling forward coming to rest on the upper chest or shoulder.

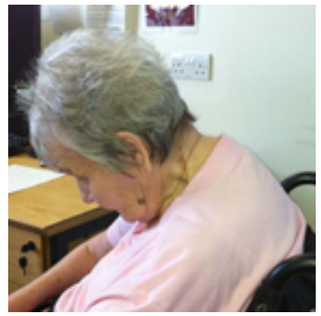


Figure 1. Example of neck muscle weakness causing the head to fall forward.

The condition can lead to extreme pain, restricted movement, problems with eating, drinking, swallowing, breathing and, importantly, adversely affect personal, face-to-face, communications. Ideally, a neck collar would help alleviate these important quality of life (QoL) issues. Current neck collar provision can be of limited use for people with MND and are regularly rejected by users for reasons of head movement restriction (being designed to immobilise the head and neck), a lack of overall support, general discomfort and social stigmatisation. It was felt that a fundamental reappraisal of the way these physical products are configured and used was needed.

This project explored the use of open and empathic approaches to the co-design of solutions for the user group. This report summarises and illustrates product design’s role as developer and explorer of various levels of insight that needed to be built to tackle complex, multidisciplinary, social and QoL issues.

The project spanned two years and was funded by the NIHR i4i program. The project aimed to provide high quality designs that were: a) appropriate in terms of function, b) desirable, c) cost effective and d) as suitable for production as possible. The research and development team consisted of clinicians from

Sheffield Institute for Translational Neuroscience (SITraN), engineers and designers the Lab4Living at Sheffield Hallam University and Devices4Dignity (D4D), working with partners including people experiencing MND and their carers. It demonstrated experts working openly together using a range of 'live' research practice methods to arrive at optimum outcomes. Of the wide range of human technical (ergonomic and anthropometric), fabrication process/cost, form/function issues the team also developed mutual empathies between project participants. These played a key role in the motivation to reach appropriate solutions.

Processes included a range of 'research through design' methods; at the heart of the strategy was a series of ten, iterative, co-design workshops. All participants were considered experts in either life experience, as product users or in their specialism. Physical making through sketch models and investigative prototypes were used as part of an in-depth multi-disciplinary, participatory, co-design process. Given the complex and often conflicting nature of the issues raised and diversity of specialist knowledge, the designers developed ways, not necessarily of solving problems, but making objects that encapsulated them. These 'provocative' and 'sacrificial' concepts served to level the playing field between the experts, help realise their creativity and to impart and synthesise collective knowledge.



Figure 2. Example 'sacrificial' models and prototypes.

One example revolved around the term 'support with movement'. The design team suggested that any provision of 'support', by virtue of the fact that it offered support, would inevitably limit an aspect movement. The device shown in Figure 2. was a result of patient-designer conversation on the topic. It emerged that that the removal of any movement provision in the vertical ('nodding') plane in favour of full movement provision from side to side (horizontally) could be acceptable. At the next workshop a model was tabled exhibiting these technical characteristics. The model enabled all participants to see and understand one idea of 'support with movement' and, whereas it was deemed an acceptable idea in earlier conversations, the device enabled all partners to empathise with the reality of that kind of solution. In this sense the physical models purposes were both provocative and 'sacrificial'.

Another approach involved the design and clinical partners wearing and evaluating existing collar products to provide greater empathetic understanding of the inadequacies of current provision. The McGill pain questionnaire was completed by each designer and emotional reactions resulting from collar use and impact on Activities of Daily Living were recorded.



Figure 3. Designers and clinicians wearing prescribed products.

In these ways the design team were able to more deeply explore human centred requirements alongside technical/clinical ones, develop insight and empathies and apply/embody knowledge in sacrificial models and invent new product concepts. Further methods included technical testing of existing and proposed designs.



Figure 4. Design listening to users "…the designers… were very interested in our reflections and they really wanted to know, you could tell they were really, really interested and they were really keen to design and appropriate product."

(https://www.youtube.com/watch?v=ZrtM2quaelA)

Conclusion

Outcomes of the study include a rationalised neck orthosis design to pre-production level, a CE marked product and granted IP. The product has been subject to further user and technical evaluations. In the evaluation the design was deemed to offer comparable levels of support as existing provision. User acceptance of the design was much improved because the design offers a lower visual profile, is more comfortable and, emerging from the research, facilitated customisable support to meet individual needs. The design is currently undergoing further user evaluations, manufacture and commercialisation strategy reviews.

Although empathy as a factor influencing design directions was not explicitly recorded during the course of the study it became clear that it was a key driver in reaching appropriate solutions for end users. Empathy was not one way - from designer to end user for example. In the same spirit as co-designing, 'co-empathies' emerged - from patient to designer, in terms of developing deeper understandings of design limitations. From health care practitioner to end users, in building insights as to what it was like to use and wear a product that is not fit for purpose. And, from patients at earlier stages of disease progression to those who exhibited more advanced symptoms. In that sense the team identified a requirement for a system that could evolve as the needs of the user changed. Design outcomes were more holistically balanced as they took on board, and embodied, a broader range of desirable and functional requirements that may have not been evident in an outcome driven by a more conventional design brief driven enquiry. The design team were able build human level tacit insight providing the basis for inventing new, acceptable solutions.



Figure 5. A pre-production version of the new neck support.

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Safe Niños: designing empathic environments for child burn survivors

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ABSTRACT

Over 7 million children a year suffer from burn injuries across Latin America, and a child's healing process can take over 20 years, due to multiple surgeries as children grow[1]. In partnership with COANIQUEM, a nonprofit pediatric treatment facility in Santiago, Chile that cares for young burn survivors free of charge, the Designmatters Safe Niños multidisciplinary studio hosted by the Environmental Design Department at ArtCenter College of Design, Pasadena, California, challenged students to co-create with stakeholders to reinvigorate the 6-acre campus with innovative, human-centered and engaging environments aimed at optimal healing for children, and support the holistic medical approach of the center.[2]

Field research at COANIQUEM afforded the design team the experience of living alongside pediatric patients and their families, and connecting with them across language, culture, art, play and music. Students and faculty used various design ethnography tools to uncover issues and opportunities informed by stakeholders' daily behaviors and activities across campus, from day-in-the-life patient journeys to brainstorming sessions with medical staff. Two follow-up field testing trips allowed a smaller group from the studio to further test ideas and push co-creation and empathic methodology to arrive at novel and useful solutions that are integrated together under an umbrella concept of an "Ecosystem of Healing."

The Safe Niños: Design for Holistic Healing book,[3] published by Designmatters in 2017, presents a narrative overview of the studio, beginning with its inception and concluding with a look toward impact at the project implementation level. The exhibition presented at the Cumulus conference features prominent illustration and graphics incorporated throughout the Ecosystem of Healing proposal.

Keywords

co-creation, social-innovation, design

INTRODUCTION

Designmatters' newest publication, Safe Niños: Design for Holistic Healing, is a comprehensive narrative of the Safe Niños transdisciplinary studio and subsequent Development Seminar. The publication offers an overview of the project's inception, beginning with the students' empathic, co-creative research at COANIQUEM with patients, families and medical staff. Back at ArtCenter, the narrative follows students through their initial concept ideation and prototyping, as well as their decision to collaborate as a unified team and present holistic, patient-centric outcomes to COANIQUEM stakeholders. The publication concludes with a look toward impact, featuring environmental and graphic design projects from the Safe Niños Development Seminar that are seeing implementation on COANIQUEM's campus. The book's designer, as well as key contributors, will be present to share insights on the design process and field questions.

The Cumulus Exhibition is a series of illustrated panels that present the empathic design process of the Safe Niños studio, as well as significant outcomes from the collaboration that are already making an impact with COANIQEUM stakeholders. Tying in with the Safe Niños publication, illustrations, photography and spreads from the book are featured throughout the exhibition.

Aim & Objective

Over 7 million children a year suffer from burn injuries across Latin America. According to the World Health Organization (WHO), the rate of child deaths from burns is 7 times higher in low- and middle-income countries than in high-income countries. A child's healing process can take over 20 years, due to multiple surgeries as children grow, with the process often representing a significant psychological and economic toll on the entire family unit. In partnership with COANIQUEM, a nonprofit pediatric treatment facility in Santiago, Chile that cares for young burn survivors free of charge, the Designmatters Safe Niños multidisciplinary studio hosted by the Environmental Design Department at ArtCenter challenged students to co-create with stakeholders to reinvigorate the 6-acre campus with innovative, human-centered and engaging environments that afford optimal healing for children, and support the holistic medical approach of the center.

From a design for social innovation pedagogical perspective, the project modeled a highly collaborative professional studio environment, where students and faculty collaborated as a unified team to envision innovative and cost-effective ways to create human-centered environments that will support a healing and nurturing atmosphere within the existing campus of COANIQUEM, where young burn survivors across Latin America receive treatment.

Driven by a co-creation mindset and methodology framework, the team seeks to design creative spaces and patient-centric experiences that are welcoming and therapeutic, as well as fun and interactive. With the aim of meeting the needs and aspirations of pediatric patients from underserved communities in Latin America, the studio presents an interesting exemplar of a design for social innovation project were empathy was integral to the research process and proposed design interventions.

Methodology & Process

At the onset of the studio, co-creation as a mindset and collective creativity were paramount as students reached out and established rapport with a variety of stakeholders (ranging from patients to medical personnel) for generative research, contextual inquiry and problem-solving.

Two weeks of immersive field research at the COANIQUEM burn rehabilitation campus in Santiago, Chile, afforded the design team the experience of living alongside pediatric patients and their families in the residential housing of the Center's campus. In small teams, students listened to people's stories and aspirations, learning from their experiences and developing empathy with patients, their families and medical staff. They connected across language and culture, through play, art, dance & music.

Co-creation was also used as a method of inquiry and adopted as a design research technique that influenced the design exploration and design development phases of the studio. While on campus teams used various design ethnography tools from day-in-the-life patient journeys, cultural probes, participatory design research sessions through art-making and play, qualitative interviews, participant observation and brainstorming with medical staff, etc in order to uncover issues and opportunities informed by stakeholders' daily behaviors and activities across campus. Many of these various techniques were codified ahead of time by method cards and a research guide manual developed the faculty for the studio.

Result/Discussion

Upon their return to ArtCenter – and inspired by the holistic nature of COANIQUEM's approach to treatment– the studio decided to work together as a unified team, integrating proposed design solutions across the spectrum of opportunities and challenges uncovered in the field. This allowed students to develop one overriding concept with interconnected elements that they iterated and prototyped in a cyclical feedback-loop process guided by faculty and COANIQUEM stakeholders feedback. This process of co-design was amplified through a second trip to the COANIQUEM campus from a representative team midway through the project.

By the conclusion of the 16-week studio, a number of proposed designs solutions emerged and were unified under the umbrella concept of an "Ecosystem of Healing" that is intended to transform the experience of patients and families seeking treatment at the clinic into a journey that promotes nurturing spaces for healing and play. At the conclusion of this second studio in August 2016, the team returned to Chile to do a second round of prototype testing and started implementing some of the solutions that were ready. Projects that were piloted in this phase included: environments that provide age specific relaxation and play spaces (TeenZone); a digital check-in system for the waiting room area; an environmental graphics system of signage and storytelling for the clinic and interactive therapeutic toys for young children to accelerate healing.

About NGO Partner, COANIQUEM

Since its inception in 1979 by Dr. Jorge Rojas-Zegers, COANIQUEM has cared for more than 100,000 children suffering from devastating and life-altering burn injuries. Because of partnerships and international support, COANIQUEM can offer their services at no cost to families, many who live in underserved communities. COANIQUEM treats 8,000 patients annually, with survivors and families living on the facility grounds for weeks and months as they undergo treatments and therapy sessions. Taking a holistic approach, COANIQUEM combines medical attention, restorative healing and comprehensive rehabilitation programs to treat physical and psychological scars.

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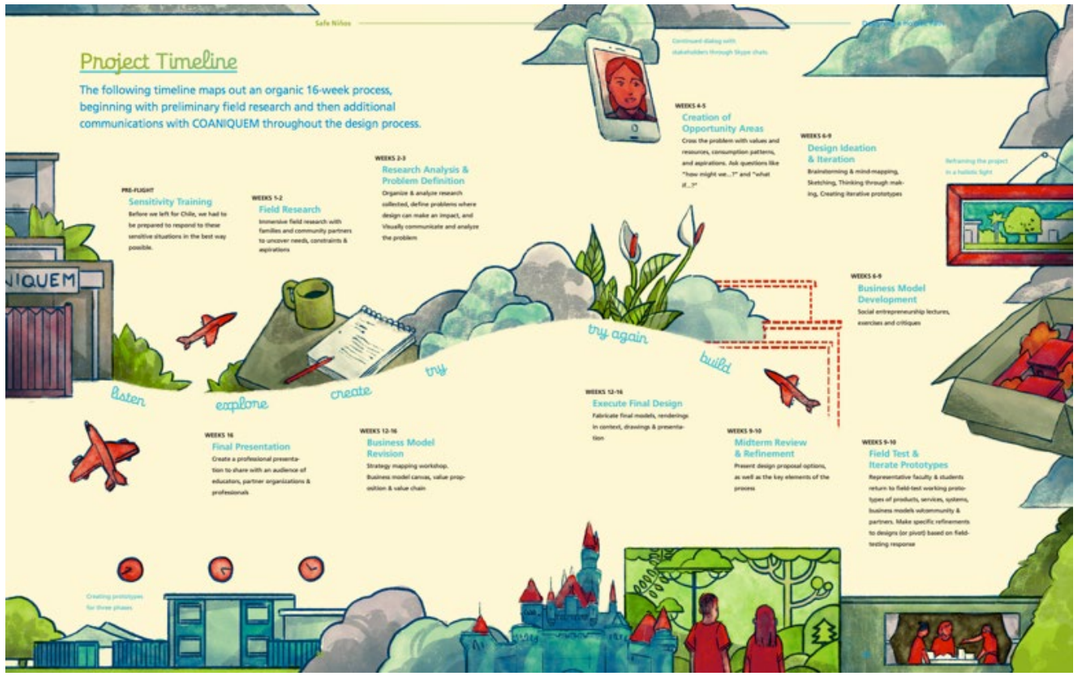


Figure 1. (Project timeline) excerpt from the Safe Niños: Design for Holistic Healing publication



Figure 2. (Field research) excerpt from the Safe Niños: Design for Holistic Healing publication







Figure 3. The Safe Niños Healing Tree Project by Alvin Oei is a magical Chilean-inspired ecosystem that helps burned children become experts in their own path to healing.

Open Design For

ENGAGEMENT

The Engagement Track received 64 submissions, out of which 14 papers, two workshops and eight artefacts/movies were selected. These papers and presentations shared and explored a diverse array of examples of engagement and were clustered around the themes of ‘places’ and ‘processes’.

From the ‘places’ stream we learned that different geographical locations offer different cultural and social contexts that impact upon the ways in which engagement is productive or not. Places of engagement can be physical or not. Online platforms can support engagement but do they take responsibility for the conditions of those engagements or their outcomes? Place can be prototyped - iterated as it comes into being - social infrastructure developing in parallel to physical infrastructure to find what works for engagement and creating the trust and equity of access necessary for meaningful engagement of people in place.

At the ‘processes’ stream, presentations shared projects about how stories and imagery supports engagement. Engagement can be fostered by 'making familiar' and 'making strange' such that people are encouraged to look again at their perspectives and opinions. Specifically, we discussed how we evaluate if and how engagement ‘worked’ and for whom? How do we follow up or feed back to those that engage? When do we stop engaging?

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The lure of the city, the possibilities of the village: crowdsourcing graphic designers in Indonesia

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ABSTRACT

Indonesia provides an enormous number of world’s designers, many of them as subscribers to world’s major design-task marketplaces, 99designs.com. Somewhat surprisingly, many of these designers are not located in cities and many have no formal training in design. They are linked to the global design profession, through crowdsourcing platforms. These kinds of platforms offer advantages both to clients and designers, saving energy resources and costs. In addition, they potentially lessen the pressures of urbanisation, an increasingly ‘wicked’ problem as Indonesia’s economy develops, population increases and natural resources are depleted. But this kind of employment is also provoking strong reactions from professional designers and design organisations in Indonesia. This paper traces those reactions and argues for more sensitivity in global design discourse to how the profession plays out in local contexts.

In this paper we present research into emerging design practices in Indonesia and their links to crowdsourcing platforms. In doing so, we open up the process of innovation to a diversity of actors who encounter and engage design processes in a variety of ways. We look at open modes of design production that do not privilege the big city and that provide new platforms for public participation in the challenges of our time.

Keywords

crowdsourcing, urbanisation, Indonesia

INTRODUCTION

In the opening scenes of the Disney film Zootopia (2016), the rabbit ‘Judy Hopps’ makes the journey from her small rural community of carrot farmers to the big city, a ‘mammal metropolis’ where various animals live and thrive. Judy’s move is portrayed as a necessary stage in becoming a professional service provider, and is romanticised by the image of cosmopolitanism and the non-stop city lights as she leaves behind the ignorance and stagnation of her rural upbringing. This narrative is such a common trope in popular culture that it is barely noticed in such contexts. It is tied to the promises of Twentieth Century modernism and inextricably linked to the design profession as a product of industrialisation.

In villages (desa) across Indonesia the story of moving to the city (kota) is told to creative young people with ambitions to help their families and aspirations to build their communities. It is part of a state-endorsed grand narrative of national ‘development’. But is this narrative really inextricably linked to the design professions? Can young designers rethink their own lives as a way to challenge the inevitability of urbanisation and all its associated challenges?

This paper poses some answers to these questions by presenting research into emerging design practices in Indonesia, focusing on designers who participate in the crowdsourcing platform 99designs. By drawing together research from the point of view of workers rather than commissioners, we highlight some of the issues with the growth of crowdsourced labour in the graphic design industry in Indonesia.

Methodology and Process

By drawing on a brief literature review of design, the creative industries, and urbanisation in Indonesia to frame the problem outlined above and conducting primary research with designers over six months. The data has been collected through interviews, and analysed using a grounded theory approach. Participants included design students, members of formal organisations such as AIDIA (Asosiasi Profesional Desain Komunikasi Visual) ADGI (Asosiasi Desain Grafis Indonesia) as well as freelance designers in Indonesia selling their services through the global platform 99designs. We have also conducted extensive research online in an effort to understand the way crowdsourcing operates on a global scale. During this process, we looked at the online identities of around 200 Indonesian designers, comparing their online profiles on the social networking site facebook and the website 99designs.

The paper is structured in three sections. Firstly, we present a brief background to the current situation in Indonesia, exploring urbanisation as a key issue, then focusing on the emergence of new technologies that have facilitated the growth of what have come to be known as the creative industries. Secondly we present sets of data collected from designers and provide a discussion informed by the literature. Lastly, in the conclusion we summarise our findings and offer some further questions to those posed in the introduction.

Background

It is important to acknowledge that Indonesia's rich cultural diversity and heritage have excited government and industry for decades: the potential of creativity has been identified both within the discourse of economic development inside and outside Indonesia. The first graphic design school in Indonesia was The Institut Teknologi Bandung (Bandung Institute of Technology), or ITB, was opened in 1973 (ITB, 2016), while Indonesia was still in the throes of the New Order dictatorship. Currently there are at least 68 schools listed on the Design Grafis Indonesia website (2016), in which 62 schools (91%) of which are in Java and Bali. Of these, 22 schools (32%) are located in Jakarta and Tangerang, while 14 schools (20%) were in Bandung, located about 155 kilometers from Jakarta. The sizes of the schools vary immensely, accepting between 30 and 600 design students from all over the archipelago each year (pers. comm. May 2016).

The increasing number of design schools in Indonesia is not without reason. The demand for designers in Indonesia has increased since 1990 (DGI, 2010). But most of the jobs in graphic design in Indonesia are still in Jakarta, followed by the major cities such as Bandung and Surabaya. Therefore many work-ready design graduates, having attended universities and colleges in major cities, do not return to their communities. The majority of design students we spoke to understood that while their education would likely lead to employment, this employment would also likely come with the challenges of living in the big cities, away from their familial support networks.

Crowdsourcing in creative industries in Indonesia

However, telling this story is not as simple as linking the growth of the design profession to the development of Indonesia's major cities. Alongside these national trends of urbanisation, Indonesia provides an enormous number of the world's designers, many of whom do not live in big cities. Many of these designers are subscribers to the world's major design-task marketplaces, the crowdsourcing site 99designs.com. These 'creatives' have varying levels of training, and design is rarely their first job. Indonesia was the biggest source of designers for 99designs in 2013, and was the second in 2014. By February 2015, there were more than 129 thousands Indonesian designers registered on 99designs.com (Pengestu 2015).

Crowdsourcing has emerged rapidly since the term was coined in 2005. In the Cambridge dictionary it is defined as:

"The act of giving tasks to a large group of people or to the general public, for example, by asking for help on the internet, rather than having tasks done within a company by employees: Crowdsourcing means that work once done in-house, from design and research to customer support, can now be farmed out, cutting costs and tapping new expertise.''

Most scholarly work on crowdsourcing has been done from the clients' perspective, and has focused on software development, the industry where the practice is most prevalent. From the point of view of clients the many advantages are clear—as well as having lower costs, it can be a more scalable process for design projects, and there is the possibility of selecting from a large pool of expertise so they get exactly what they want, rather than committing to an agency or studio. From the point of view of workers though, there is a different set of benefits, and some complexities yet to be examined by scholars. These include the choice of when and how to work, the opportunity to develop and disseminate a low cost portfolio, and a lower level of commitment to any particular employer (Murray Ruse 2015: 1). For workers in Indonesia, a major factor in choosing to work on platforms such as 99designs is that working online means that they are not being forced to move to the city. The benefits of this include being close to family and community, being able to care for dependents (children and the elderly) while working, choosing your own hours, and not having the living costs of rent, transport and other bills.

Results and Discussion

We interviewed six graphic designers using 99designs and found the following information, organised into the themes of urbanisation, support networks, the future of crowdsourcing, and responses of design organisations.

Urbanisation

For designers themselves, the effect of rapid urbanisation is a difficult problem to overcome. One graphic designer we interviewed (Participant 1) graduated from a school of design in Tangerang (about 25 km from central Jakarta) is currently working as a designer for a large national housing developer in Tanah Abang, Central Jakarta, with a net income of about Rp4 million. Currently he is single and lives with his parents in the area of Kotabumi, Tangerang. He has the contractual obligation of working 5 days from 9am to 5:45.

Every day he departs home at 7am and arrives at the office at 8:45, then returns home between the hours of 8 and 9 pm. Another possible alternative is to rent a room around the office, but he would have to pay a much higher rent of around Rp.1.000.000, with higher costs of living and a different lifestyle. It is these pragmatic issues that become obstacles for designers working in Jakarta.

Similar issues were faced by Participant 2 while working as a designer in a User Experience/User Interface (UI / UX) company in 2012. He considers that the industry UI / UX is not sufficiently developed in Indonesia, so that at the time of becoming a UI / UX designer he was asked to do a lot of marketing by the company. Though he wanted to make the most of his design knowledge, particularly with regard to graphics. After leaving that job, he returned to Lombok to become a freelance designer. But he was disappointed with some of the clients who ask for his work to be done at a lower price, even for free, giving unreasonable deadlines or overly interfering with the design to give suggestions for improvements that did not align with the principles of design he had learnt and developed in his tertiary training.

He finally decided not to work with local clients. He took advantage of the internet to search for clients outside Indonesia which he considered were more likely to appreciate the design and give him the freedom to be creative. To find clients, he utilised the site 99designs to meet with foreign clients through contests held. Through a contest, he learnt to deal directly with various types of clients in English, which he said would have been more difficult to learn if he had have been a designer in an office in Jakarta, because client relations are usually handled by the account executive. These contests then secured for him some regular clients, until he finally no longer had to rely on the contests.

In contrast to Participant I and 2, Participants 3 and 4 did not express the desire to work in Jakarta. They chose to return to Lombok to be close to their families. After graduating, participant 3 worked in Banjarmasin (Kalimantan) as a freelance designer, and then returned to Lombok when his parents became too elderly too take care of themselves. Similarly, Participant 4 went back to Lombok after graduated and works full-time as a graphic designer at 'Permata Salon' and 'Permata Hati Islamic Preschool', two branches of the same company. In addition to working full time, he also has regular clients from Russia and Singapore first aquired through the Deviantart site (http://www.deviantart.com/) and 99designs. Both Participant 3 and 4 sought local clients around Lombok and Banjarmasin, and both were disappointed with the feedback they received from clients. They both commented that local clients had a tendancy to request free design services and did not value their work highly. They also said proces offered were very low, that they were given very short deadlines and that they briefs and feedback they received for their work did not comply with the principles and design theory they had learnt about at design school.

In the views of the four participant we interviewed, there was a strong sense of idealism associated with their design work. All four wanted to apply the knowledge they had gained through higher education and work experience, but were frustrated with what they understood as the lack of a general appreciation of design in their local context. For these designers, crowdsourcing sites like 99designs provided a set of standards for design work by price, quality of briefs, type of work, completion time and so forth. The designers felt more valued by these anonymous online clients than by the clients they found in their locality.

Before becoming designers, participants 5 and 6, who were living in the Central Java village of Kaliabu, performed low-wage jobs such as coconut picking, masonry, laboring, carpentry, plumbing, bus driving, with low incomes. These jobs were precarious and did not provide income each week. As designers, their income was more reliable and they felt more in control of their employment. Each design job earned them at least USD200 for each design work which is far beyond their previous income (At the time of writing 1USD is equal to approximately IRP13,000).

This amount may not be enough to fund the lifestyle in an urban center in Indonesia, but the cost of living and lifestyle in remote villages like Kaliabu are vastly different to the city. While Kaliabu is located around 10 km from Salaman, which is a transport hub, the village itself, like many in Java, has struggled to develop its local economy. Because of its isolation and poverty, many people from Kaliabu move to urban areas such as Jakarta.

Support Networks: design community

Participant 5, a former bus driver based in Kaliabu, entered a 99designs contest when he received information from a colleague who had previously entered. He then invited friends to join, and the idea spread. Dissemination of information and positive action of this kind is described by several of the Kaliabu designers as 'getok tular', a Javanese term which is a variation of the idea of 'word of mouth'. The strategy of information dissemination around particular events and practices builds the close relationships between the villagers necessary for a supportive creative industry community in a remote area of Indonesia.

Typically villagers interviewed were close to each other in other ways before they became designers. For instance, they pooled resources to build and maintain their houses, and they shared the care of their families. They expressed care about the values behind their initiative to create a design community even though it was not based on a professionalism taught at a tertiary level. In Javanese language, 'rewo-rewo' means sloppy. It is commonly used to refer to a scattered mess, like a public bus not cleared of public trash. Rewo-rewo is the term used by members in the group, because the group is formed from a variety of people with different backgrounds, an uneven assemblage across the usual lines and ranks of Javanese society. A similar support community has also appeared in Salaman. Interestingly they adopted a more formal and cosmopolitan name, 'Salaman Design Community (SDC)'.

At the beginning of their formation, both Rewo-rewo and SDC were places to learn and exchange ideas about the challenges and problems with all matters relating to crowdsourced design, particularly 99designs.

However, with the current conditions in the area, with a faster internet connection, participants say they are seeking answers to their design questions through general internet searches before asking one another for help, so the activity of the community is dwindling. This opens up more time for the contests themselves, or to rest or to work on creative ideas. For SDC, some old members still gather at least every to chat and enjoy each other's company, although they are no longer mutually reliant to discuss design issues and the contests.

The future of crowdsourcing

When we asked about the future of crowdsourcing graphic design in Indonesia, Participant 6, as a representative of SDC, was somewhat reluctant to discuss any kind of commitment. Although it is clear that the selling design online is profitable, he said that there are increasing numbers of smart and talented people who have every right to compete. Furthermore, he said, the contests are less precarious than other forms of employment, but still not secure to the point that he can commit to graphic design as a long term career. It can also be definitely tiring working to overseas business hours, working online presents a different set of

challenges in his household. He gave these reasons for establishing another business printing T-shirts in the village. He says the profits are much smaller but the business model is more secure and sustainable. For him, working globally online with 99designs is simply a way to raise capital to establish local businesses for more secure sources of income. It is also done by friends with Elin different business sectors such as Internet cafes or opening a printing business.

Participant 5 had a different response to the question of the future. He sees globalisation as giving him the same opportunities as everyone else, despite his circumstances of poverty. He says he will continue to work in this field and he is optimistic that there is a positive future in this area.

Both Participant 5 and Participant 6 stated that formal education has not been important to them because, in fact, they are currently earning as much as those who have been educated at expensive institutions. For them, working as designers has provided a decent living, capital, positive opportunities for learning, and the opportunity to remain in their village Kaliabu and district of Salaman close to their families and communities.

Responses of Design Organisations

But this kind of employment is also provoking strong reactions from professional designers and design organisations in Indonesia. Members of ADGI, for instance, raised concerns about how the idea of selling design through a contest, such as those run by 99designs has the potential to disrespect design professionalism.

ADGI is aware of the opportunities and challenges presented by the online marketplace, especially for fresh graduates wanting to upgrade their portfolios. Instead of wasting time with traditional job hunting, they can earn immediate status once they complete jobs and prove their worth to clients. However, they raise the issue that crowdsourcing designers means there is little development in the field, because often neither the contest holder nor the winner of the contest know anything about design and the design process. At this point, the four years spent during the bachelor education in design major can feel useless.

However AIDIA present a different perspective. They explain that graphic design students are trained to be design thinkers, not just logo crafters. Design graduates should not be worrying about their prestige as graphic designers, but thinking about how to create their own jobs in a changing field. The AIDIA consideration is, this crowdsourcing not only gives opportunities to graduate designers, but also to amateur designers (logo makers) like people in regional areas of Indonesia. These opportunities produce noticeable social and economic change among these people. To develop these opportunities further, AIDIA is facilitating education about basic design principles, such as colour and layout theory, in a series of workshops called ‘designer.ing.kampung’ in Salaman.

There are indeed many legitimate concerns from professional design organisations. One is the presence of plagiarism within the graphic design profession in Indonesia. Participant 7, a member of AIDIA and design lecturer, says that those designers who have not received higher education understandably often are unfamilar with the ethics of the professsion, and can plagiarise designs without realising. As an example, in one thread on the wall of the Community 99designs Indonesia on facebook, we documented a discussion about an allegation of plagiarism against one of the members. The discussion included advice about how to manage the accusation, whether to dispute the allegation through a 99designs process called ‘Feature Challenge’ and the expression of heartfelt opinions about the importance of originality. The designers we interviewed know plagiarism happens in the design profession generally because of a lack of understanding of professional ethics, and that is detrimental to both clients and other designers. They did not blame crowdsourcing for the problem and were hopeful that it could be overcome by providing education outside traditional institutions. They saw a role for the professional design organisations in giving workshops and seminars on issues related to the design. AIDIA is already doing this with community designers through programs such as ‘desainer.ing.kampung’. But to do this, these organisations need strategies, time, cooperation, and even government support at a higher level than what exists to support designers across Indonesia today.

Conclusion

This paper has presented research from the perspective of graphic designers in Indonesia to look at how changes in modes of production, new markets and new technologies are effecting lives in villages and cities. We have begun making connections between designers’ labor with the broad and wicked problem of urbanisation. In doing so, we begin to open up the discourse of innovation and creative industry to a diversity of actors who encounter and engage design processes in a variety of ways. In examining the interaction with the company 99designs, we have looked at one mode of design production that does not necessarily privilege the big city, and can potentially provide more choices for entrepreneurial designers. As many of the most successful Indonesian designers using this site are not located in cities and many have no formal training in design, this research has posed some serious questions for the design profession and design education in Indonesia.

Interview List: May 2016

Participant 1 : Jakarta
Participant 2 : Lombok
Participant 3 : Lombok
Participant 4 : Lombok
Participant 5 : Salaman
Participant 6 : Salaman
Participant 7 : Jakarta

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Engaging design pitches: storytelling approaches and their impacts

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ABSTRACT

This paper discusses the findings of a doctoral research study that builds an understanding of the relationship between storytelling approaches and their impacts at the design pitch. Determined through a literature review, the following desirable impacts were used to focus conversation during a series of semi-structured interviews conducted with employees from Unilever and Accenture: 'Delivering Understanding', 'Demonstrating Value', 'Stimulating Critique', and 'Encouraging more Holistic Thinking'. In discussion of over fifty design pitches, interview participants identified many storytelling approaches used by designers when pitching product and service concepts, and their perceived relationships to the aforementioned impacts. Emergent themes were deciphered through the thematic analysis of the interview transcriptions, where four impacts were found to have significant relationships with the following storytelling approaches: 'Acknowledging Cultural Perspectives and Beliefs', 'Diversity/Difference', 'Detailing Concept Development', and 'Imagery, in particular Analogy'. A summary of the relationships is presented in a framework, entitled 'Design Pitch Storytelling: The Impact-Approach Framework'. Of particular significance for engaging audiences are the illustrations of the following relationships: firstly, detailing concept development can bring both transparency and familiarity to the design process, allowing the audience of the design pitch to have critical discussion and develop more holistic thinking around project territories; secondly, incorporating imagery can awaken a curiosity that leads to abstract and novel thinking, again encouraging more holistic viewpoints to develop around project territories.

keywords
storytelling, design pitch

INTRODUCTION

Storytelling at the Design Pitch

Storytelling is an important phenomenon to acknowledge when examining collaborative processes as the universality of stories in sharing and conveying knowledge is well recognised (Nonaka and Takeushi, 1995, Davenport and Prusak, 1998, Collison and Mackenzie, 1999, McDonnell et al., 2004). Collaborative relationships such as those between designers and their clients provide a platform for storytelling to occur during the conveyance of knowledge from one party to another (Leonardi and Bailey, 2008). One such conveyance of knowledge is the design pitch, where designers present concepts to clients in a formal setting during the conceptual design process. It is the storytelling that occurs in this instance that provides the focus for this paper.

Storytelling occurs in many different contexts, and thus there are many different definitions applied to story. Perhaps the most widely recognised context for storytelling is the storybook, as many look to the written word in order to assemble philosophies on story (Jones, 2006, Ochoa and Osier, 1993). However, with respect to the context of a design pitch, a more relevant perspective on storytelling is that of psychologist Jerome Bruner (1990) who developed a theory of the narrative construction of reality. Bruner (1990) provides the following set of criteria for an occurrence of storytelling:

- Action directed towards goal
- Order established between events and states
- Sensitivity towards what is canonical in human interaction
- The revealing of a narrator's perspective

If we relate these criteria to design concepts, the relevance becomes apparent – take for example a concept for a new road bike: the goal of a story about it, told at the design pitch, could be getting from point A to B. An order established between events and states could become the maintenance required, such as putting air in the tyres (events), and/or the various locations on the journey between A and B (states). Sensitivity towards what is canonical in human interaction is central to design as all concepts are created with a user in mind, in this instance a cyclist. The concept itself could be considered the perspective of the designer – their unique interpretation of a road bike.

Further to this, storytelling's specific relationship with design has been considered from a variety of viewpoints. Design researcher Peter Lloyd (2000) examines dialogue between members of design teams in order to extrapolate the stories that they tell during the process of designing. Of particular interest in his research are the criteria he establishes to identify an occurrence of storytelling:

- It can be interpreted or read
- Different narrative viewpoints can be included
- There is a sense of closure; a definite ending
- A name can be invented that references the complex of action

A verbal exchange between designers is a different context for storytelling when compared to a more formal presentation at a design pitch. Therefore, to make use of these criteria they have to be viewed critically. The first criterion suggests that a story is interpreted or read. With respect to a design pitch, a story is also heard or watched, both of which also require interpretation. Therefore, when adapting this to the context of a design pitch, the criterion should simply state that 'it can be interpreted'. The third criterion suggests a sense of closure is required; however, a concept, which by all intentions may require further development, can be told using an open-ended story to stimulate further discussion. Therefore, it is not necessary to fulfil this criterion at a design pitch. The second and the fourth criteria are wholly relevant. As discussed previously, a viewpoint or range of viewpoints can be represented through a concept or range of concepts. Also, when pitching a design concept, it is likely that a name will be invented to reference the story, which can then act as a recall for the design pitch.

When comparing these criteria to Bruner's (1990), it can be seen that there are some similarities: both agree that a story must reveal a perspective or viewpoint; Bruner (1990) suggests that there must be an order of either events or states and Lloyd (2000) proposes that there must be a definite ending suggesting an order of events or states. However, in addition to Bruner's (1990) criteria, Lloyd (2000) also suggests that a story must be interpretable, meaning that an understanding of something can be gained from it and that a name can constitute a reference to the story's meaning. It is this combination of these theorists' models for storytelling, adapted to the context of the design pitch, which define the storytelling that this paper examines and the specific criteria it fulfils.

Impacts of Designers' Storytelling

Designers tell stories in many different modes (verbally, visually, implicitly in what they produce, and explicitly in how they discuss it), and with many different methods (persona scenarios, characterisations, metaphors and so on). Many specific impacts have been claimed from such modes and methods of storytelling. The following summary introduces a range of approaches to storytelling and their related impacts investigated in the research landscape relevant to this study. These summaries are used in the next section to help consider which impacts are desirable during a design pitch, and establish which are explored in this paper.

Concerning the artefacts produced whilst designing, it has been established that many different impacts can be achieved through interpretations of the stories embedded within them. Cross (2006) discusses how sketches and renderings can disclose an understanding of how a concept is used or how a concept is made. For example: an architect's blueprint could help an engineer tell a story about how to make a building, or help an interior designer tell a story about how people may use a space. Perhaps less obvious is Schön and Wiggins' (2006) proposition that a series of artefacts can deliver a story of the critical dialogue that ensues between a team of designers. They suggest that the changes throughout iterative sketch work and prototyping can disclose the outcomes of negotiations within a team of designers. It can therefore be reasoned that during a design pitch, the presentation of artefacts produced throughout the process of designing can reveal these negotiations and consequently invite discussion around how a concept has developed.

When exploring the use of digital storytelling (web-based stories, interactive stories, hypertexts, narrative computer games, audio and video podcasts, etc.) it can be seen that relative to society, it is a phenomenon inferred by the development of technologies, and as a facet of society designers too have begun to employ these technologies and tell digital stories. Currently, the majority of research into digital storytelling's specific impact when used as a presentational tool resides in primary and secondary school education (Signes, 2010). It is suggested that the overarching benefits of digital storytelling in this context are that it develops an individual's digital, global and visual literacy (Robin, 2006). Should it have similar impacts when used in a design pitch, it can be reasoned that there is a potential to: improve communication between designer and client through use of this relatively new medium (digital literacy), allow a more holistic discussion around design concepts (global literacy), and perhaps lead to increased engagement for design consultancies, as the visual language they trade in could become better understood (visual literacy).

As previously mentioned, designers tell stories verbally throughout the process of designing. It has been established that these types of stories are used in design teams to construct a common language, where particular words and phrases are adopted that have stories attached to them (Lloyd, 2000, Lawson, 2005). For example, a designer working within a team may be inspired to apply a mosaic aesthetic to a product after visiting Gaudi's Cathedral in Barcelona. In their explanation of this thinking, the story of their experience may become attached to the word 'mosaic', and this may become mutually understood by the rest of the team when using the word 'mosaic'. Therefore, such words and phrases may have less meaning to an outsider, or even a more inexperienced designer (Lawson, 2005). It may be crucial to explain these stories during a design pitch, as some subtleties of a design concept's development may become lost. However, it is argued that conversational storytelling operates in this way due to its informal setting (Denning, 2007b). Therefore, it may be difficult to achieve the same benefits from this storytelling when retold during the more formal setting of a design pitch.

Madsen and Nielsen (2010) believe that persona scenarios can be used to aid conceptualisation within a design process. A predominant claim in their work is that the characterisation of a protagonist placed in a problem scenario provides the understanding required to begin conceptualisation. This belief parallels philosophies outside the remit of design. Turner (2008) suggests that demonstrating the trials and tribulations of a central character encourages critical reflection in the audience in his examination of historical examples of transformative learning. Herskovitz and Crystal (2010) suggest that basing characters on archetypal personas, such as

the protagonist, can foster an emotional connection when constructing brand stories. However, in their quest of best practice when it comes to the construction of persona scenarios, Madsen and Nielsen (2010) profess inconclusive results.

With respect to achieving a mutual understanding of an idea, there appears to be conflicting strategies to adopt when storytelling. When discussing change management and how to encourage staff with disparate views to share mutual understandings of new ideas, Denning (2007a, 2007b) proposes that telling exemplar stories based on real life situations is more effective than using abstract notions. However, Adamson et al. (2006) demonstrate how abstract analogies can in some instances alter disparate perspectives and unite employees thinking, providing examples of storytelling exercises where employees roles are likened to the roles undertaken by characters in popular films. Using universally understood contexts (popular films) to present analogous parallels to real life situations provided the catalyst in changing (and aligning) employees' perceptions in the examples they provide. With respect to the context of a design pitch it is possible that both 'real life' and 'abstract' notions in storytelling could provide mutual understandings of a design concept.

Finally, it is apparent that there are also conflicting ideas regarding consistency within stories. In this instance, consistency refers to the brand story (should one exist) that belongs to the organisation exploring the development of a new product or service. With respect to the context of a design pitch, the implications of this conflict are best demonstrated when contrasting the viewpoints of: Herskovitz and Crystal (2010) who propose that a story consistent with a brand is effective in engaging employees; and Quesenbery and Brookes (2010) who propose that unfinished stories, or stories that are inconsistent with others, are more likely to challenge perceptions. When telling a story to challenge perceptions it appears there is an element of risk attached to either approach: a story consistent with a brand may fail to challenge perceptions, whereas a story inconsistent with a brand may disengage the audience.

The Impacts Explored at the Design Pitch

Now that the parameters for storytelling have been set, and an overview of what is already known about the relevant impacts of storytelling has been given, more specific impacts that are desirable during a design pitch are established. In terms of the wider research study this paper examines, the impacts 'Delivering Understanding' and 'Demonstrating Value' received focus. However, as this paper is preoccupied with how the design pitch engages its audience in the design process, only the impacts 'Stimulating Critique' and 'Encouraging More Holistic Thinking' will be described, as the findings that relate to these areas of focus uncovered more relevant information.

Stimulating Critique

Firstly, as mentioned previously, Schön and Wiggins (2006) propose that a series of artefacts demonstrate the evolution between each iteration of the design concept, and in effect communicate the critical dialogue that occurred between the design team developing the concept. Therefore, should a series of design artefacts be presented during the storytelling that occurs at the design pitch, the audience can gain an awareness of the critical dialogue that ensued between designers during the design concept's development. It can be reasoned that this awareness will allow the audience of a design pitch to access these critical dialogues and therefore engage in them. As Schön and Wiggins (2006) propose, this type of communication is beneficial for the development of a design concept, and it can therefore be inferred that 'Stimulating Critique' should be a preoccupation when examining the impacts of a design pitch, as the organisation employing the designer(s) are also charged with the design concept's development. It is important to note that in this context critique is not negative as it is intended to contribute towards concept development.

Secondly, as stated before, Madsen and Neilsen (2010) propose using persona scenarios during a design project in order to develop design concepts, and as alluded to previously, persona scenarios can form part of the storytelling that occurs at a design pitch. Constructing a persona scenario involves defining the characteristics of a typical user (persona). Building a character with a set of traits and then sharing this with audiences can create empathy for that character, but it also invites critique around how to affect behaviour with intervention (through product or service with respect to a design project) (Turner, 2008). It can be reasoned that critique stimulated in this way enables a decision making process that allows a concept to develop. Therefore, as Madsen and Nielsen (2010) suggest, persona scenarios are useful in the development of a design concept partly due to the fact that they stimulate critical thinking. Again, this claim supports the idea that 'Stimulating Critique' should become a focus when examining the impact of a design pitch.

Finally, as outlined earlier, there exists a school of thought that being inconsistent with existing brand stories (should they exist) when pitching design concepts can be a useful way to stimulate debate and discussion through challenging the status quo (Quesenbery and Brooks, 2010). However, it can be seen that this may come at the price of devaluing the design concepts credibility (Herskovitz and Crystal, 2010). Therefore, this provides further vindication for focusing on 'Stimulating Critique' when examining the impact of a design pitch, as current literature suggests disparate ideas on how to achieve it.

Encouraging more Holistic Thinking

As mentioned previously, organisational management strategist Denning (2007b: 110-111) suggests that storytelling is a vehicle for eliciting cultural change as it can be used to help employees acieve a more holistic view of their organisation, and consequently think differently about their role, mentioning specifically that:

• Narratives are more likely to be effective than abstract communications, because this is how human beings think and make decisions, and because it simulates the emotional significance of experiential learning.

• Indirect Methods are more likely to be effective than direct methods, because indirect methods leave it up to the audience to make up their own minds rather than having opinions forced upon them.

When considering the context of this research study, these declarations have some interesting implications. Firstly, the design pitch of a proposed product or service may require abstract communication on some level, as real human narrative surrounding the product or service will not yet exist. This therefore may pose a difficulty in challenging a belief of an audience member about a particular aspect of a design concept, such as what its primary purpose should be. Secondly, a design pitch is an organised gathering where storytelling is pre-empted and therefore direct, again a quality that Denning (2007b) professes to inhibit the chances of getting people to think in alternative ways.

Contrary to this are Adamson et al. (2006) observations of storytelling in healthcare organisations, and in particular how it helped to positively impact the San Juan Regional Medical Centre. In this instance, an abstract analogy of the medical centre's infrastructure helped to stimulate a change in employees' attitudes towards their job roles, consequently improving internal relationships. Each role within the medical centre was likened to the roles characters play in Indiana Jones films. Using this abstract analogy, employees began to see their roles, and others, in a different light.

Considering the context of this research study, abstract communication, in particular analogies, are often used during a design pitch to represent qualities of the design concept that are not yet apparent as the product or service does not yet exist. This would seem to suggest that storytelling at the design pitch is well placed for encouraging people to think in alternative ways.

As demonstrated, the capacity that stories have in encouraging more holistic thinking is acknowledged by organisational management strategists such as Denning (2007b) and Adamson et al. (2006), in spite of presenting different viewpoints. Therefore, it is justifiable to consider 'Encouraging More Holistic Thinking' when examining the impact of the design pitch, as designers tell stories in organisations whilst pitching designs with an agenda to influence thinking and often challenge the status quo, however conflicting strategies exist for achieving this.

The Case Study Sites

Now that the specific focuses of the study described in this paper have been established, the method and some of the cases used to explore them will be introduced.

Unilever

Unilever is a multi-national organisation that houses over four hundred brands. Essentially, their brands promote health and wellbeing, providing products in the food and hygiene market sectors. Their brands include Lipton, Knorr, Persil and Dove amongst other household names. They have six research and development centres distributed throughout the world helping them to innovate and remain competitive.

Unilever's Household Care department and Laundry department, in their Port Sunlight based Research and Development Centre, have long standing relationships with Northumbria University, continually employing designers from their various courses and in-house consultancy to work on different design projects. During these projects, designers from Northumbria University (both student and professional) have used storytelling as a way to communicate their design concepts in various formats to employees at Unilever's Household Care department and Laundry department during design pitches. The first two case studies of the research discussed in this paper comprise of semi-structured interviews with groups of employees from each of these departments. During the interviews, recordings of the stories told during design pitches (where the interview participants had been present) were shown to refresh memory, and then discussion was prompted around their impacts with specific focus on the impacts described in the previous section (should they have been achieved). In the first two cases, over six employees were interviewed and approximately thirty-five design pitches were discussed.

Accenture

Accenture is a global management consulting, technology services and outsourcing company, with approximately 275,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$28.6 billion for the fiscal year ended Aug. 31, 2013. (accenture.com, 2013)

The Innovation Centre based in Accenture's Fenchurch Street offices opened in 2012, serving as a venue for Accenture employees to host workshops aimed at teaching their clients how to innovate to meet the changing needs of the consumer. For each workshop or series of workshops that are run, Accenture employs design consultancies to provide them with brand identities; this can include commissioning products, films, illustrations or a whole series of touch points throughout a client workshop experience. Many of the design consultancies Accenture has worked with have presented design pitches using storytelling that meets the criteria outlined in the introduction of this paper. Consultancies that have pitched in this format include: Someone, Engage, Replay Films and Tag Worldwide to name but a few. Approximately 15 design pitches were discussed with interview participants from this case.

Discussion

Interview transcriptions were analysed using a thematic analysis, to establish the more significant relationships between storytelling approach and impact in the cases examined. The following discussion details these relationships providing superlative examples from each case.

Detailing Concept Development

'Detailing Concept Development' proved to be an approach to storytelling that was central in stimulating the critique of a design concept in the research study this paper examines, with participants from all three cases emphasising its importance.

During the Unilever Household Care case study, an interview participant explained that when a design concept is discussed in terms of its evolution a critical dialogue could flow. They explained

that this was because insights made by a design team surrounding the territory of a product are often related to particular features of a design concept, providing a set of judgements he could agree or disagree with. For example, during one pitch designers discussed the evolution of the packaging design, they explained that the colour red had been chosen due to the fact that red symbolises good fortune and joy in Chinese culture. Another interview participant from this case reinforced this idea by suggesting that in order to discuss something critically 'the life journey of the product' had to be known, including: the evolution of the concepts development, how it might be used once produced, and even how it might be disposed of. It would appear that in this case, the more that is known about a design concept, in particular its origin, the more comfortable participants felt about discussing it critically. Familiarity with the design process appears central in allowing critical discussion.

When comparing this to the Accenture case study, a similar observation was made. When discussing a project where designers had been asked to develop a concept for an invitation, an interview participant explained that they were more able to think critically about a design concept when evolutionary stages were presented as well, no matter how unrealistic. For example, at one stage a design consultancy was considering a wooden box with hidden compartments proposed as a concept for the invitation. Although this was unrealistic in terms of cost, the interview participant felt that the presentation of this evolutionary stage effectively communicated an understanding of what the intention of the finalised concept had been. Therefore it would appear that familiarity with the design process, in particular the evolution of ideas, was central in allowing critical discussion in this case as well.

In the Unilever Laundry case study, details of concept development were not shown as frequently in the stories told at the design pitches. However, when discussing the ability to critique design concepts, interview participants suggested that the inclusion of 'cuts that didn't make it', or in other words: earlier ideas during the evolution of the design concept, would have helped to stimulate critique.

Literature exploring the critique surrounding design concepts places an importance on the production of artefacts throughout a design process. Schön and Wiggins (2006) describe multiple artefacts such as a series of sketches or models as a representation of the critical reflective dialogue shared by the design team. It would appear that the presentation of these artefacts during a design pitch invites clients to engage in the critical dialogue surrounding these design concepts, which the design team had during their development. Previously, approaches to storytelling concentrating on a design concept's development have been suggested to enhance the process of designing (Demian and Fruchter, 2009, Garcia et al., 2002), now it can also be appreciated that they too have the ability to engage clients in a critical dialogue.

Imagery, in Particular Analogy for Stimulating Critique

'Imagery, in particular Analogy' also proved to be an approach to storytelling that was useful in stimulating the critique of a design concept in the research study this paper examines, with participants from two cases emphasising its importance.

In the Unilever Household care case study, an interview participant describes a situation where an internal team at Unilever revisited the design pitch from one project in order to think critically about each design concept in order to further develop them. In their description they explain how the analogy of an eagle, used to represent the trigger application of a cleaner, had significant impact. However, they were unable to articulate clearly why this was the case, they were just aware that this imagery had been useful in getting the internal team to start thinking critically about the design concept. When trying to bring reason to this insight it seems logical to suggest that when you are presented with imagery, there is a natural curiosity to work out why it has been used. So for example, the members of the interview participant's team may have looked at the eagle with this curiosity and for example: likened the shape of its beak to the nozzle of the trigger, or the way it flies to the spray emitted from the trigger, or simply it's poise to the shape of the bottle and its presence on the supermarket shelf. In doing this, the brain had begun to think in abstract terms to make sense of the analogy and in turn, critical dialogue had ensued about its apparent relevance.

This idea is reinforced in the Unliever Laundry case study where an interview participant highlights an example of an analogy in a design pitch and explains that it was useful in stimulating the critique of a design concept. In this particular example, the design pitch used footage of a shoal of fish to demonstrate the way a laundry detergent moves through a wash cycle, and an internal marketing team watched this in order to aid them in a critical dialogue geared towards developing a concept for a television advert.

When looking at literature relative to the research study's context, analogy is not specifically linked to critical dialogue surrounding design concepts. However, in the more general remit of storytelling in society, many examples exist of stories told using analogy to inspire critical reflection, particularly in religion (Bleyl, 2007).

Being Diverse/Different

'Being Diverse/Different' when storytelling during a design pitch was believed to encourage more holistic thinking around design concepts and design projects in the research study this paper examines, with participants from all three cases discussing examples of this.

In the Unilever Household Care case study, an interview participant discusses how a designer's approach in terms of presentation was vastly different to theirs, or indeed any other employee at Unilever. They believe that being involved in collaborative design projects where designers implement their diverse/different ways of communicating concepts expands their mind, allowing them to think more holistically about design concepts and projects on a continual basis, simply because they had not previously seen things done in this way before. Another interview participant reinforces this idea by highlighting a specific example where a group of designers presented a design concept using non-traditional advertising techniques that were entirely new to them (guerrilla advertising). It seems that the element of surprise in viewing something entirely novel can result in the encouragement of more holistic thinking with regards to design concepts and projects.

When looking at the Accenture case study, this situation repeated itself. In their description of one particular design pitch, an interview participant explained that it was revealed that the designer's way of interpreting information was vastly different to their own. They proclaimed that the presentation of the designer's interpretation of the brief as an introduction to the design pitch was when this difference became most apparent, and it was this alternative beginning of the designer's story that triggered more holistic thinking around the design project.

In the Unilever Laundry case study an interview participant's comparison of two design pitches supports the idea that being diverse/different can encourage new ways of thinking. During each pitch, designers used multimedia to demonstrate the science behind laundry detergent, telling the stories of particles moving through the clothes in a washing cycle. Upon viewing these pitches, the interview participant explained they were 'unmoved' by the pitch that was within the capability of her own internal team to produce. However, the pitch that used stop-frame animation (a technique unfamiliar to the interview participant), 'expanded their mind'. They proclaimed that using this technique encouraged them to view the product in an entirely different light.

As mentioned previously, a prime example of how a diverse story changed the thinking of an organisation was presented by Adamson et al. (2006) in their observations of a storytelling exercise at the San Juan Regional Healthcare Centre. Through examining the case evidence, it would appear that the novelty and diversity of a design pitch could also stimulate more holistic thinking, around design concepts and projects. However, with more organisations being exposed to design consultancy pitching continually, remaining novel could represent a challenge for future design practice.

Imagery, in Particular Analogy for Holistic Thinking

'Imagery, in particular Analogy' also proved to be an approach to storytelling that closely related to encouraging more holistic thinking around a design concept or project in the research study Examined in this paper, with participants from two cases discussing its role.

As mentioned previously, in the Unilever Laundry case study, an interview participant discusses how one design pitch in particular 'expanded her mind' due to its diversity. Alternative reasoning for this encouragement of more holistic thinking, other than the fact that they had been exposed to something novel (stop-frame animation), could be that they were presented with imagery of the laundry cycle that provided an analogy of the particle science.

When relating this to the Accenture case study, a similar example can be found that supports this idea. One interview participant explains that they are more likely to think differently and more holistically about a design concept, if non-literal ideas are presented in stories (or in other words, analogies). They appreciate that when you are forced to think in abstract terms about something, you are encouraged to 'see it in a different way'. Specifically, they refer to a pitch where a design team used the style of popular comic/film 'Sin City', to provide analogies representing phases of a concept for a digital justice service. In doing this, elements of the design concept they had not previously considered were exposed, encouraging them to think more holistically about what should be encompassed in a more holistic digital justice service.

Analogy may not always be an appropriate way to present a design concept, particularly if it is a product. However, if a service or experience, and indeed an experience surrounding a product, is being presented, an analogy may prove to encourage more holistic thinking. Analogy, if original, can be viewed as diverse or different as it is an alternative way of representing something. Therefore, it stands to reason that an analogy can represent a diverse or different approach to telling a story, encouraging more holistic thinking in the ways discussed previously. Again, with a prime example being Adamson et al. (2006) observations made at the San Juan Regional Healthcare Centre.

Summary

To summarise, it appears that two key approaches to storytelling equipped the design pitches with characteristics indispensable for stimulating critique around the design concepts.

Firstly, storytelling approaches that bring 'Familiarity' to the design process allowed interview participants from all cases to think more critically around the design concepts. This 'Familiarity' was achieved through 'Detailing Concept Development'. Traditionally a design pitch will demonstrate a proposed design concept in use, however it appears that it's own evolutionary back story is just as important in terms of thinking critically around it.

Secondly, 'Curiosity' stimulated by the use of 'Imagery, in particular Analogy' can also result in critical dialogue surrounding a design concept. In trying to make sense of an analogy due to a naturally curious disposition, 'Abstracted Thought' is required, which in turn alludes to a critical dialogue surrounding the design concept that the analogy represents.

It also appears that two key approaches to storytelling equipped the design pitches with characteristics indispensable for encouraging more holistic thinking around design concepts and projects.

Firstly, stories that encompass 'Novelty' for their audience can encourage more holistic thinking. 'Novelty' is of course achieved through being deliberately 'Diverse/Different' in your approach, such as using stop-frame animation in the context of an environment where only PowerPoint is used, or using an original analogy for the purposes of presenting a design concept. However, maintaining originality presents a challenge for designers, especially in terms of presentational techniques that are finite.

Secondly, stories that elicit 'Abstracted Thought' encourage thinking more holistically and can be achieved in a design pitch through utilising analogies. A natural 'Curiosity' provokes the audience to relate the analogy to the design concept, which requires 'Abstracted Thought'; in turn this can uncover aspects of the design concept previously discarded, such as in the example provided by the Accenture case study.

The following figure illustrates the findings of the research study this paper explores, including the relationships described in this summary.

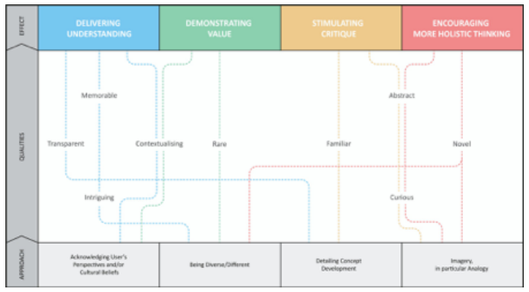


Figure 1. Design Pitch Storytelling: The Impact-Approach Framework

Conclusion

The original contribution to knowledge that the research study examined in this paper makes is delivered in several ways. Firstly, key findings make up a framework that describe storytelling approaches that have been employed during a design pitch to elicit certain impacts (shown in part in the previous section). Secondly, there is originality in the insights revealed with respect to the specific storytelling approaches adopted by designers in the cases examined (as demonstrated in part in the previous section). Finally, there is a gap in knowledge with respect to understanding the design pitch and the impact that storytelling can have in this context. This gap is apparent for several reasons: firstly, when searching the British Library's online catalogue, there is little published literature about the design pitch, and even less about storytelling and the design pitch. Also, research that explores storytelling and its relationship to design predominantly focuses on storytelling that occurs during the process of designing, theorising ways in which ideas can be developed through the exchange of stories between designers. Further to this, when drawing relevance from theories in other areas of literature, conflicting ideas are implied with respect to the approaches to take when storytelling and the impacts they can have (as described in the introduction of this paper).

As this paper is preoccupied with how the design pitch can engage its audience, specific focus has been placed on the impacts 'Stimulating Critique' and 'Encouraging more Holistic Thinking'. Key pathways illustrated in the framework that relate storytelling approaches taken at the design pitch to these impacts can be summarised as follows:

• Using diverse or different approaches in both mode (such as stop-frame animation) and content (such as including an analogous reference) when telling a story can introduce novel ideas that encourage more holistic thinking around a design concept and its project territory.

• Detailing concept development when telling a story during a design pitch can bring a familiarity to the design process, allowing the audience to engage in critical discussion around the design concept. The transparency that this brings to the design process can also encourage more holistic thinking around the design concept and its project territory.

• Using imagery, in particular analogy, when telling a story during a design pitch stimulates a curiosity to understand the appropriateness of said analogy. Often this requires thinking about the design concept in an abstracted way, stimulating critical discussion and encouraging more holistic thinking around the design concept and its project territory.

When designers are pitching their concepts to clients, it is likely that they will want to engage them in critical discussions around their concepts, and encourage them to take more holistic, and possibly consider alternative, viewpoints. Therefore, of particular importance here is considering ways in which to: bring a diverse or different approach to their storytelling; reveal the stages of concept development in the story, and include imagery, in particular analogy. It is important to state that this paper promotes more strategic consideration when pitching design concepts, with particular focus on storytelling, rather than promoting 'generalisable' rules.

Focusing a storytelling perspective on the design pitch in this way has identified the importance of the role that storytelling at the design pitch has, whilst developing an understanding of the working relationship between a number of designers and their collaborating organisations (in terms of the impact they can have). In doing this, this paper promotes a higher degree of consciousness when pitching design concepts, through encouraging a reflection on the information presented.

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Heritage as experience: creative approaches to heritage in contemporary art and design in the UAE

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ABSTRACT

The aim of this paper is to enhance the links between art, design and cultural heritage in order to build identity and social engagement. The questions that lead the investigation are: How can art and design revive, re-utilise and re-interpret cultural heritage today? How can tradition be introduced in the creative process without renouncing novelty? Why should cultural heritage be involved in innovation at all? Finally, how would such an enterprise benefit the whole society?

Two methods of approach are used: In the first part, the research investigates the evolution of the notions of art, design, cultural heritage and 'heritage as experience'. The theoretical frame for this review includes the philosophical work of John Dewey and the proposals of Donald Schön and Bruce Archer. The second part studies some relevant examples of current relationships between art, design and heritage in the United Arab Emirates today, and their potentiality in building engagement and identity. The works of artists, designers and craftsmen are analyzed under the guidelines of the UNESCO program Designers meet Artisans.

This investigation is relevant today for two reasons: first, globalisation is making particularly problematic any sense of identity and belonging, and, second, current evolution of the experiential nature of art and design is allowing them to intervene in society in a much more effective way that should be encouraged and promoted.

Keywords

reflective-heritage, art-design-heritage, UAE

INTRODUCTION

The aim of this investigation is to promote social engagement and identity through the creative association of art, design and heritage. While some cultural heritage experts recognise the need of approximating significant past culture to a more diverse and complex society, some artists, designers and craftsmen are using cultural heritage for breaking distances between high and low culture, contemplation and usefulness and between production and consumption. These ongoing events occur in the intersection of art, design and heritage that is the object of study of this investigation.

Previous to the analysis of the different types of hybridisation of art, design and heritage, it is necessary to update and fine-tune the respective definitions of the activities involved. Art, design and heritage have evolved significantly in the recent past. In fact, it is this evolution what has made them compatible. This research interrogates the intersection of art, design and heritage trying to discover their capacity for activating social engagement and identity; the intention is to explore the potentiality of mingling tradition and modernity creatively and to discuss how this relationship can benefit society.

This study is divided in two parts: one theoretical and one empirical. In the first part, the research tries to find ways of defining art, design and heritage that make coherent the hybridisation of events analysed in the second part. The notional map includes the definition of art as experience framed by John Dewey and the theoretical proposals of Donald Schön and Bruce Archer. The second part studies relevant examples of art, design and heritage intersections in the United Arab Emirates today, and their potentiality in building engagement and identity. The works of artists, designers and craftsmen are analysed under the guidelines of the UNESCO program Designers meet Artisans in order to give an objective analytical structure to the enquire.

The examples analyzed in Part II are recent initiatives and some of them are just taking place right now. In all of them, heritage converges with contemporary art and design in certain degree. The examples are: the 2013 Sharjah Biennale "Re: emerge, Towards a New Cultural Cartography"; The "Fatima Bint Mohamed Bin Zayed Initiative" (FBMI) for empowering women through participatory design (2010); The three-year research program, exhibition and publication on palm-leaf architecture developed by Dr. Sandra Piesik (2012); and some private initiatives that merge novel design with craftsmanship in the MENA region such as the International commercial fair 'Design Days Dubai' and the exhibition "Once Upon Design: New Routes for Arabian heritage" at 1971 Design Space in Sharjah (2016).

Methodology and Criteria of Analysis

The methodology proposed for this research aims to match the criteria set by UNESCO in 2005 to regulate the relationships between designers and artisans and extend them into wider intersections between creativity and heritage. Among the UNESCO's guidelines and recommendations, this study identifies three criteria for analyzing the interaction between art, design and craft. Under these criteria the discussion of the different examples showcases the difficult balance of this interface. This contemporary outlook on craft, art and design considers not only the social and economic impact of the initiatives but also its creative and cultural significance and their contribution to build engagement and identity. The aim is to confront the criteria with current examples/interventions as they are right now with the intention of contributing to evolution and creation of a holistic and more comprehensive approach in future interactions between heritage and creative activities. The criteria of analysis are focused, first, on the role of the people involved; second, on the products, processes and context of the intervention, and, finally, on the outcomes. The three criteria are:

1) The role of designers, artists and artisans. This criteria looks to investigate if the artisans are treated as skill laborers executing the designers/artist vision. Designer's and artist's knowledge of the artisan's medium and environment is essential to avoid lack of references and superficial interpretations of the past.

2) Products, processes and context. This aspect asks about the way the intervention mediates between tradition and change: by creating or modifying products from local craft without eliminating traditions; by using local or new sustainable materials; improving or changing existing technologies; adapting products to market forces.

3) Outcomes. This criteria explores the mutual benefit from the interaction recognizing what artisans and craft gain from art and design: "sustainable livelihoods, new markets, value-addition to products, exposure/visibility, community rehabilitation, gender equality, technical enhancement, confidence and self-belief" (UNESCO, 2005, p.117).

This set of principles based on the participants, the products and the outcomes, are used to analyze the mentioned initiatives that are trying to enhance engagement and identity in the context of a new nation, the United Arab Emirates: a country with an old nomad tradition that is exploring new territories of cultural understanding.

Why the UAE is Relevant for this Study?

Several reasons give consistency to the fact that this research is located in the United Arab Emirates and make this region especially relevant to observe the promotion of identity and social engagement.

On one hand, the majority of the population (mostly 90%) of the country is not local; they come from different countries and cultures of the Arab world, South Asia and Africa. The perception that local culture is at risk of disappearing has recently encourage UAE' Political and Cultural Authorities to preserve ancestral practices promoting a new visual culture rooted in the tribal past of the UAE. This fact is an important shift from previous policies that were implemented in the country. Since the 1960s oil boom, modernisation was the political and social catalyst for a fast international recognition and the main ground for building a new national identity leaving apart Bedouin life style and traditions. Institutionalisation of design in the region was based on the rupture with its traditional knowledge. Local tools, materials and handicrafts were identified with a past of poverty and underdevelopment.

The fast modernisation of the country fostered the association of western models with quality of life, good design and comfort. Rather than connecting design with cultural concerns such as social customs, gathering rituals, religion, or privacy, the main focus was on how to be modern. Nevertheless, the recent and growing concern for activating social engagement and identity rooted in the tribal past has encouraged the reconciliation of local customs with international modernity through art and design.

On the other hand, the examples analyzed are recent initiatives in which heritage converges with contemporary art and design in certain degree and this fact was crucial for the initial selection of the objects of study. This confluence is relevant today for two reasons: first, globalisation is making particularly problematic any sense of identity and belonging, and, second, current evolution of the experiential nature of art and design is allowing them to intervene in society in a much more effective way that should be encouraged and promoted.

Part I. Theoretical Context: Redefinitions of Heritage, Art and Design

1.1. Preliminary proposition: Experience as human definer

The notion of experience is at the centre of this research and needs clarification before starting it. John Dewey distinguishes between experiences and the apathy of the living creature, in which the interaction between the self and the context is subject to innumerable and senseless events. For Dewey, experience is reserved for those occasions when a meaningful sequence of events emerges giving a special sense to it and makes clear that you have to differentiate that diner from all other diners, that conversation, etc., and consider them an experience (Dewey, 2005, p. 37). Experiences have a unity that allows to identify them out of the continuous stream of events of everyday life. Thus experiences are those portions of life that have truly significance, that can be isolated among the rest of lived events and which define, as they involve values, human condition in a broad sense. Nevertheless, in spite of the fact that experience comes from the qualification (or formality) that emotions and ideas generate in certain lived events, this does not mean that experiences are rational, emotional or behavioural, even more, it is the other way around: experiences just occur, and, in their occurrence, they are themselves the essential references for true thinking, acting and feeling (Dewey, 2005, p. 38). In Dewey's system, as in all post-Kantian philosophy, art is at the top of human experiences, so, reversibly, life experience is "art in germ[…] even in its rudimentary forms, it contains the promise of that delightful perception which is aesthetic experience" (Dewey, 2005, p. 19).

Putting experience at the base of the art-design-heritage association might contribute to convert heritage into something alive, something meaningful. In order to make this association possible,

two conditions are posed here: First, cultural heritage is thought to deal with portions of life (past experiences) that should be considered significant for current and future generations (Smith, 2006; Staiff, 2001); Second, art is recognised as a reflective activity (Kant, 1790; Fiedler, 1887) and the design process is interpreted as a 'reflection in action' as Donald Schön proposed (1987). Therefore, the hypothesis is: if heritage is re-defined from an experiential perspective, then art and design could become an efficient engagement tool, due to the reflective nature of aesthetic judgement and the reflexivity of design process.

1.2. Redefining Art as a Research Tool

In order to associate art, design and heritage it is necessary to redefine art from a holistic perspective. The linkage between art-design-heritage is possible under the theoretical frame created by the German philosopher Emmanuel Kant. The specificity of aesthetic experience Kant identified is based on the autonomy of art as a third realm of human experience, side by side and equal in status to ethics and science (Kant, 1790). After Kant, Konrad Fiedler considers that artistic activity is essential to art: "in front of works of art one should not act only seeing, as one does in front of visible things, but instead one should be moved by the representation of the activity from which those works have emerged" (Fiedler, 1887, p. 269). In both cases, Kant and Fiedler, the materiality of the works of art shares status with the experience this same materiality provokes. This experiential notion of art can also be traced in the works of the historical avant-garde and the first designers and architects at the beginning of the 20th century (Junod, 2004; Jaime, 2000; De Fusco, 1964)

Art is even more directly related with experience since John Dewey theorises their relationship in his seminal work Art as Experience (1934). As Dewey says "in both production and enjoyed perception of works of art, knowledge is transformed; it becomes something more than knowledge because it is merged with non-intellectual elements to form an experience worthwhile as experience" (Dewey, 1934, p. 302). Under this notional map, the idea of art as experience could contribute to improve cultural awareness if art participates in problem-solving strategies when cultural values are involved. Thus, promoting art as a research tool in cultural matters should not be considered as an anachronism that implies the imposition of art as a form of knowledge. Our consciousness of the links between the past and the present are subject to transformation, and aesthetic experience can play a brilliant role for this conversion.

1.3. From Cultural Heritage to Reflective Heritage

Recent heritage praise and expertise progress have created a kind of isolation for the most respected and celebrated cultural heritage. The institutionalisation of art has produced similar separation between the works of arts and the common human experience where they come from (Dewey, 2005, p. 1). In the case of heritage management, this ironic perversity is responsible for the contemporary contraposition between the so called Authorised Heritage Discourse and responsive Critical Heritage Discourse (Smith, 2006).

Authorised Heritage Discourse is the already traditional trend on cultural heritage management that was established by UNESCO in 1972. The Convention Concerning the World Cultural and Natural Heritage that for the first time asks to pay attention to historical buildings, sites and landscapes is basically inspired by the French notion of patrimone and inheritance. The original idea of heritage interprets history as a container of values (represented in material objects) that should be received and transferred (or inherited) to new generations. The traditional idea of heritage is intimately associated to the will of perpetuating national grandeur that coincidently reverberates with the English conservation ethos of 'conserve as you found' and the Victorian spirit of John Ruskin's The seven Lamps of Architecture (Smith, 2006).

It was the pervasive opposition of non-western cultures what obliged UNESCO to open the Eurocentric idea of cultural heritage in order to incorporate non-western understandings and created the 2003 Convention for safeguarding of the Intangible Cultural Heritage. Even western communities that did not feel represented by the hegemonic Authorised Heritage Discourse criticised it from within western institutions as Authorised Heritage Discourse tends to filter meanings through a national and/or international perspective that "simply do not reflect the cultural or social experiences of subaltern groups" (Smith, 2006, p. 36).

Introducing intangibility (a clear reaction against the exclusivity of monuments) re-situates cultural debate clearly in the realm of values, where it should have always been. This approach, which considers all heritages as intangible (Smith, 2006), advocates for an interpretation of heritage as a process, not a closed event or finished object. Professor Smith explains it this way: "Heritage, I want to suggest, is a cultural process that engages with acts of remembering that work to create ways to understand and engage with the present, and the sites themselves are cultural tools that can facilitate, but are not necessary vital for this process." (Smith, 2006, p. 45)

1.4. Redefining Design: From Functional Objects to Cultural Subjects

At the end of the 1960´s and beginning of the 1970´s –when design was established as an academic discipline and formally entered university curricula- some theorists such as Donald Schön and Bruce Archer, draw definitions of design that opened the door to discussions that are still pertinent.

The cultural value of design has been constantly under debate due to its reflective nature and the changing roles of designers in society since the beginnings of the industrial era. In general terms design can be considered any plan or projection developed in advance of a product or procedure material or immaterial. Through modelling, designers experiment and generate ideas as the "key element in the act of designing is the formulation of a prescription or model for a finished work in advance of its embodiment" (Archer, 1965, p. 58). This open definition of design, based on its capacity for prediction, was expanded in epistemological terms by Donald Schön some years after. Based in his research about the architectural design studios of MIT, Schön refined Dewey's notion of reflective thinking, always associated to life experience, linking it to drawing as a tool. Schön's notion of "reflection in action" (1987) becomes a cloudy idea when drawing does not participate in it (Jaime; Lopez Reus, 2016). The real merit of Schön is not to have discovered a new epistemology for practitioners, but his criticism to the hegemony of instrumental rationality in education is fully valid. Schön's proposal points out the particular capacity of design to deal with problems that include conflict of values and different natures. From this point of view, the reflective nature of design makes possible a holistic approach to reality that does not accept separations between mind and body, seeing and acting, representing and being.

1.5. Participatory Design

Participatory design -and more recently Design Thinking- have tried to engage design in a theoretical and practical change that challenges the obsession with objects and look for a social and collaborative effort characterised by human-centeredness (Björgvinsson; Ehn, 2012, p. 101). Participatory design started in the Scandinavian countries with the movements of democratisation of production promoted by workers in the 1970's. Nowadays the most important vindication of Participatory Design is that everyone affected by design should be involved somehow in the design process. This definition not only legitimates user's voice within design but also promotes the integration of participant´s knowledge within the design process.

Pell Ehn, a pioneer of Participatory Design, proposes a new paradigm for the design profession and its appreciative systems: "a fundamental challenge for designers and the design community is to move from designing 'things' (objects) to designing 'Things' (socio-material assemblies)" (Björgvinsson; Ehn, 2012, p. 102). While the view of designing "things", with a lower case, does not move forward to bring any change in the current production of objects and artifacts as commodities; designing "Things", with an upper case, offers the possibility of modifying the space of interaction and collaboration between different socio cultural layers that could open new and more beneficial ways of doing. In this context, "Things" are all practices, representations, expressions as well as knowledge and skills that match with the UNESCO's definition of "intangible cultural heritage" mentioned before.

Part II. The examples: Interfaces between Heritage, Art and Design in the UAE

After revisiting the evolution of the notions of heritage, design and art the questions about a possible relationship between them that addresses contemporary issues are: What are the intersections between art, design and heritage that contribute to develop identity and social engagement in a globalised world? How would art, design and heritage –and society in general- benefit from this sort of relationship? And finally, can art and design help to preserve and give a renovated impulse to heritage appreciation today?

In order to answer these questions, the second part of the investigation aims to study relevant examples of what could be called "reflective heritage" or possible intersections between art, design and heritage today. The guidelines of the program Designers meet Artisans launched by UNESCO in 2005, two years after declaring the importance of intangible heritage, are the framework used to analyze the proposals developed in the UAE in the 21st century. The selected examples have different degrees and proportions of art, design and heritage and only two of them -"Heritages" at Sharjah Art Biennial and "The Nomad"- present an active participation of art mingling heritage and design. These proposals range from public to private initiatives and at different levels of participation from institutional, collective and individual.

The original crafted objects and techniques described below represent the main sources of inspiration for the examples that are analyzed. Before the oil discovery in the 1960s, the UAE had a nomadic Bedouin population organised in tribes that made their living through keeping goats and camels, fishing, and the pearl industry. These seasonal activities made them move between the oasis in the desert and the coastal areas throughout the year. Their houses were handmade with palm leafs (arish) and Bedouins developed a range of handicraft skills connected with their rituals and daily needs such as leatherwork, pottery, palm leave and wool weaving. Traditional pottery include hib for storing and cooling drinking water; burmah for keeping milk fresh, and chirr for storing dates and dried fish; the weaving of palm fronds or khoos was used to make baskets, fans, floor coverings, and mats (Fig. 1) Wool weaving and spinning (sadoo) was used for making clothing, camel trappings, tents, floor cushions, carpets and rugs.

All these handicrafts derived its raw materials and forms from the local environment and social rituals and were appropriate for the nomadic lifestyle of Bedouins (Al Fahim, 2008; Habib, R., 2006; WAM, 2008; WAM, 2010). After the 1960s' oil boom hand-made objects and local Bedouin construction techniques were progressively replaced by machine made objects, and high technology tools. The change of life style from nomad to urban settlements accentuated the loss of cultural significance of hand made products or Emirati craft. Craft became a tourist souvenir and was confined to local ethnographic museums and heritage villages (WAM, 2006; WAM, 2008; The National staff, 2008).



Figure 1. United Arab Emirates traditional palm fronds handcrafted objects (khoos).

2.1. Heritage as Art

The first example analyzed in this second part is a proposal in which heritage and creativity are mingled in a complex way, showing the complex relationship between design and craft. The event escapes the manipulation of identity that Authorised Heritage Discourse does of artistic values of heritage by situating the epicenter of the action in artistic territory. The 11th Sharjah Biennial, Re-emerge: Towards a New Cultural Cartography deals with heritage as an artistic theme and not as a scientific expertise enquire. This Copernican swift moves the question of heritage and identity to the ambit of aesthetic experience, making it less permeable to nationalist and classist manipulations, in a state of affairs in which even the possibility of universal values of cultural issues are at stake (Smith, 2006, p. 99). The fertility of this approach relays on the possibility of using art as a research tool.

The curator of the 11th Sharjah Biennial, Yuko Hasegawa, describes the general "mission" of her practice as "to use a discussion of contemporary art to delineate a cultural map of our time from a non-Eurocentric stand point" (Hasegawa, 2013, p. 19). The main question that the 11th Sharjah Biennial tries to solve is how to draw a new cultural map if the truth is that "far from inventing a new modern world system, Europeans entered into one that had existed for millennia, largely dominated by Asia [and] the ascension of Europe and the 'decline' of the East is seen as one of many fluctuations in an all-encompassing global history rather than an inevitable and permanent shift" (Hasegawa, 2013, p. 19). Citing Andre Gunder Frank, Hasegawa openly proposes art as way of opening new ways of discussing cultural issues in general, and in this particular case heritage and identity (2013, p. 19).

As a central concept of the 11th Sharjah Biennial Hasegawa proposes the courtyard, (characteristic urban feature of Sharjah), as "places of experiences" and "places of experiment" (Hasegawa, 2013, p. 24). From the high quality and big quantity of interventions that the 2013 Biennial exhibited, the artwork selected for this study opens a pertinent and complex discussion about new ways of art-design-heritage collaboration.

2.2. "Heritages": a problematic bridge between tradition and modernity

A good example of the barriers and difficulties that should be overcome when intersecting modern design and traditional craft is "Heritages", an artwork commissioned to born French artist Saadane Afif by Sharjah Art Foundation that was displayed at the Biennial in 2013. The artist intention was that "the project materialises a bridge between tradition and modernity in the context of the United Arab Emirates" (Hasegawa, 2013, p. 47). Following the drawings of Italian designer and theorist Enzo Mari in A Project for Self-design of 1974, the artist asked an arish carpenter in Sharjah to build a chair. Instead of using pine boards as Mari's original proposal prescribed, the artisan would use palm leaves, or arish, an old traditional technique typical of the Arabian Peninsula. The final artwork was composed by a written interview that the artist conducted with the artisan and thirty arish chairs were informally spread and actively used at the exhibition spaces of the Biennial.

In A Project for Self-design Mari developed a series of drawings of furniture that can be made very fast with pine boards and simple tools such as a hammer and some nails. The booklet specified that the furniture could be built by anyone except a factory or a dealer. He also arranged with a company that users can buy the pre-cut set of lumbers for their assembly. The project's description gives to the user the possibility of doing changes and variations not just for avoiding an "slavish repetition" but also to train user's critical skills to assess the conceptual cohesion of the objects of the market (Mari, 1974). By changing the material of Mari's design the interest of the artist was to witness the modifications that were necessary throughout the process of hand making (Hasegawa, 2013, p. 47). A comparison between Mari´s drawings and the final chairs reveals that the change of material and technique had essential consequences in the craft process.

If the original intention of Enzo Mari was to trigger a critical discussion about the objects that surround us, the way of designing, producing, marketing and selling them, the role of artist Afif is to promote a mediation between the designer's idea -crystalised by drawings- and the arish carpenter's hand-made skills: here mind and body are split. There was a dialog between the artist and the artisan –the interview- but there was no conversation with the materials of the situation that could have reconciled the traditional hand-made technique with the squared forms of Mari's design. This artwork underlines the problematic intersection between modern design and traditional craft when there is no conciliation between the designer's idea and the artisan's medium. Arish artisans know very well that palm leave fronds must be clamped but never drilled, as the Sharjah's artisan did following the Mari's book instructions. The artist ordered the artisan to "follow Mari's instructions as close as possible" (Hasegawa, 2013, p. 47) preventing the craftsman to develop a more fertile and knowledgeable experimentation. (Fig. 2)

A holistic interaction between the artisan and the designer should overcome the role of the artisan as a mere laborer of the designer's ideas. Blending the advantages of traditional skills (handmade eco-friendly products with distinctive features of authenticity, adaptability) with modern creativity, the designer's role is seen as "an indispensable intermediate, a 'bridge' between the artisan's know-how and his knowledge of what to make" (UNESCO, 2005, p. V). In an ideal scenario, any meaningful intervention of designers in traditional crafts should be respectful with the people involved and with the cultural environment and identity of communities. Possible interventions might modify existing products or create new ones without eliminating traditions and generate a mutual advantage from the partnership fostering a process of long-term interaction in which the designer learns to understand the artisan's medium and environment.



Figure 2. Arish chair from the installation "Heritages" by artist Saadane Afif exhibited at the 11th Sharjah Biennial, Sharjah, 2013.

2.3. Participatory Design for Creating Sustainable Livelihoods

The aim of the "Fatima Bint Mohamed Bin Zayed Initiative", FBMI, the second initiative analyzed, is to create a sustainable livelihood for communities with high child mortality, low live expectancy and extreme poverty through the empowerment of women in Afghanistan. The program –a mixture between the private sector and public social services- was established by Her Highness Sheikha Fatima Bint Mohamed Bin Zayed in 2010 in partnership with Tanweer Investments in Afghanistan and provides long term support and resources for sustainable development in the production of organic hand-made carpets. Fatima Bint Mohamed is one of the nine sons and daughters of His Highness Sheikh Mohamed Bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces. Her initiative is a holistic effort that benefits the communities of the artisans involved bringing them employment, technical training to learn and update their skills, social services such as children and adult education and free healthcare without forgetting the commercial viability, and the exposure to international markets of their products. The FBMI supervisors control the participation of families in the healthcare system and children full-time schooling through monthly house visits. Adults also receive basic training in literacy, numeracy, health and hygiene. (FBMI, 2016) For its social achievements and for the high quality of their hand-weaving designs the FBMI has received awards and international recognition.

The design products and their process of production reflect a thoughtful and respectful integration between the old women craftsmanship and the new standards to meet the quality requirements of the world markets and the long term sustainability of the process. For generations, carpet weaving has been an essential craft for Afghanistan's women, so the program gives them the opportunity to practice and develop their craftsmanship while earning a fair salary for their work. The carpets and other home-clothing items are made with indigenous Afghan wool and cotton to support local farmers and their rural nomadic lifestyle. To reduce damage of the environment the carpet production uses traditional washing methods and natural vegetable dyes. The initiative also provides equipment (looms) and offers the artisans the opportunity to progress within the industry "from wool-collectors, to wool-spinners and carpet weavers" (FBMI, 2016).

The mediation between tradition and modernity also affects the design of the carpets. The carpet production includes, traditional design, using antique motifs and patterns, and contemporary. In order to ensure the correct quality of the traditional carpets in terms of design, style and color, regional artists from FMBI and local university students receive training with experts in traditional pattern decoration and supervision by Afghanistan's carpet designers. The weavers are provided with full scale templates indicating all carpet details in terms of size, color, pattern, number of knots, etc. For the contemporary designs the FBMI started the collaboration with influential international designers such as Norma Kamali, and Christopher Farr, among others (Fig. 3). In the cases of Kamali and Farr the contemporary creations are completely different from the traditional Afghan carpet (Cheng, 2014). There is no intention of borrowing or reusing any motif or color and the artisans' intervention is limited to execute the designer's vision. The proposal of Emirati designer Khaled Sharaf tries to revert the role of the artisans as mere laborers, despite the fact that the weavers do not practice an equal control of the craft's final outcome as the designer does. For the collection Puzzle, his intention was to highlight a creative collaboration between the designer and the artisans. The designer allowed a controlled creative contribution of the weavers, leaving specific portions of the carpet to be filled by the women's own design using Afghani patterns (FBMI, 2016).



Figure 3. Contemporary carpet designed by Norma Kamali inside the FBMI shop in Abu Dhabi, UAE.

2.4. Heritage Preservation: Palm Leaf Architecture in the UAE

Palm leaf architecture in the UAE challenges the possibilities of art, design and heritage association. A comprehensive technology that uses date palm trees for building houses since 7000 thousand years ago and that is almost extinguished today is certainly paradigmatic for reflective heritage. Dr. Sandra Piesik developed a research that ended up in an exhibition in the Pavilion of the Royal Geographical Society in London and a book: Arish: Palm-Leaf Architecture (2012). The research was based on direct observation and interviews. The system, learnt directly from old local women, works with dried palm leaves, palm trunks and rope done with the fibers of the same trunks. (Fig. 4)



Figure 4. Traditional weaving method. FBMI showroom at Dubai Design District, UAE.

Dr. Piesik's is the only investigation available on palm leaf house in the UAE. A broad investigation that covered all 7 emirates is able to find stylistic variations through the country. It is a pity that this

valuable research does not provide architectural drawings that explain in depth the building details of arish houses. A superficial photographic step-by-step analysis of the building process of the house gives a vague idea of the sophisticated knowledge applied in the process, but do not go into deep principles that could help answering the main question of this research about how the knowledge of ancient civilisations can help in finding long term climate change solutions. Dr. Piesik found in her valuable seminal work on the Arish houses that the palm leaves “don’t like to be drilled, it’s much better to clamp them” (Miny Mo, 2012). The importance of these sort of conclusions that need the type of deep immersion Dr. Piesik certainly did, was already shown in section 2.4 “Heritages” of this research, in which the installation presented by artist Afif at the 2013 Sharjah Biennale would have benefited from this knowledge.

The research of Dr. Piesik is certainly enhanced by the collaboration of local artisans that implement the craft (and transmit their knowledge) that would disappear in the near future when they are not available anymore. The purity of the process, not introducing any changes in the reconstruction of the Arish house is compensated by the so called Eco-Arish Building Prototype in 2009, also published at the end of the book, that explores the modernisation of the structure, the possibility of prefabrication and the introduction of contemporary decoration in the building process of the arish house (Piesik, 2006, p. 166).

2.5. Designers Inspired by Craft

Another example of intersection of creativity and heritage that works with UAE’s arish tradition is the installation The Nomad. In this case the proposal includes an original interpretation of the essence of Emirati traditional houses. More in the mood of experiential heritage, the Dubai-based designer and artist, Khalid Shafar, did a “re-appropriation” (East, 2015) of the arish house. In The Nomad, the essence of arish is reinterpreted as a place “to interact with one another, talk to each other” (East, 2015). Clearly aligned with Smith’s consideration of heritage materiality as something almost superfluous (Smith, 2006, p. 45), in this work Shafar only retains from the original arish house a central palm trunk from which a spidery wood round structure expands to accommodate a circular sofa. For him, gathering, interacting, and talking as experiences capture more of the essence of the arish than any replica (Denman, 2015). In this case the core of the craft has been understood as a ritual, taking away the craft element –its materiality- and proposing an experiential approach to heritage. In The Nomad the deep change in cultural practices occurred in the UAE in a very short frame of time is viewed as an opportunity to revive and question the relevance of the ritual as a “living craft” (UNESCO, 2005, p.10). In this proposal, likewise other hybridisation of contemporary design and heritage produced and/or exhibited in different UAE venues, regional and local designers have borrowed from the source of popular tradition.

The main concern of any contemporary interpretation of craft would be to preserve the legitimacy of its cultural context. The transformation of a particular craft from its original use –that might be ritualistic or not- to a decorative object or purpose, results in an irrelevant and superficial interpretation of heritage if not supported by serious contextual reflections: “products have semantics that are rooted in specific contexts; without the particular context, the semantic and an entire unspoken amalgam of history, culture, religion, ritual, tradition and thought are lost” (UNESCO, 2005, p. 10). Any change of a craft product –in terms of use, form, process of production, technique, shift of material, color, texture, etc. - might require a responsible knowledge of the traditional medium and a respectful attitude toward the environment and its cultural identity. Then, in order to avoid lack of references and superficial or iconographic allusions to vernacular sources, artist, designers and cultural managers need exposure to the medium used by artisans and local links to develop their practices (Borges, 2011, p. 10)

The homogenisation of products resulting from global markets has paradoxically created a growing type of consumers, mostly well-educated with purchasing power, seeking for the sustainability and authenticity of hand-made products and recycled materials. This is the new market that some fairs and design platforms like Design Days Dubai are trying to explore through the work of regional designers. Among many others, it can be mentioned Iranian designer Taher Asad Bakkhtiari for his production of kilims inspired by tribal motifs that comes from his own family and using Iranian craft techniques; Lebanese designer Karen Chekerdjian for her contemporary combinations of traditional woodwork in furniture design; architect and designer Marc Baroud from Beirut for his line of handcrafted objects made with leather (DDD, 2013).

Unlikely other proposals in which designers drank from tangible heritage, in the case of the exhibition Once Upon Design: New Routes for Arabian Heritage the common ground are local narratives and shared memories that belong to the rich intangible heritage of customs and oral traditions of the Arabian Gulf. The exhibition hosted at 1971 Design Space in Sharjah was the culmination of one year of research done by Banafsajeel. In spite of the poor social appreciation of design and various technical and practical limitations of production that the curator identified in the region, the study revealed the common perception among designers, curators and cultural managers of the stimulating environment of creativity and commercial opportunities for the design industry in the Gulf. The investigation also acknowledged about the preeminence of Western-oriented education as the main reason that explains the superficial approach to indigenous sources and the lack of contextual references in the design discipline in the region (Aldabbagh, 2016, p. 6).

Conclusion: Reflective Heritage

The main objective of this research is to speculate about art, design and heritage as engagement and identity builders. The intersection of these activities is studied here by updating their respective definitions and by analyzing some recent examples in the context of the UAE. The methodology implemented for analyzing the different art-design-heritage approaches is based on the guidelines suggested by UNESCO to regulate the relationship between designers and artisans. Three levels of scrutiny, controlling the role of participants, products and outcomes have given the possibility of evaluating objectively the experiences analyzed.

The different associations between art, design and heritage have triggered off variations in the intensity and nature in the examples analyzed. On one hand, there is the pioneer arish house research, done by Dr. Piesik, which is an initiative that works to preserve a disappearing craft, but presents deficient technical information of the building system. Also there is Dubai Design Days and 1971 Design Space that are both promising starting points that still have to find ways of insufflating confidence in the associations of local traditional Bedouin culture with contemporary art and design. On the other hand, there are the “acts of remembering” (Smith, 2006, p. 45) involved in the 11th Sharjah Biennial analyzed in this paper that respond promisingly to the ambitious will of re-writing heritage and culture from a globalised sensibility. This example, by its own, demonstrates that with courageous and generous institutional support new realms for cultural and artistic experimentation are not only possible, but necessary if new identities, or the rescue of forbidden ones, are at stake. Fatima Bin Mohamed Initiative is an exemplar case of success in terms of UNESCO exigencies for fair relationship between designers and artisans and for the social and cultural benefits of creating sustainable livelihoods.

Only a bit more than a decade has passed since the declaration of the value of intangible heritage. In this short period of time the notion of heritage and the ways to manage it have evolved more than in the two previous centuries. Certainly globalisation and geopolitical changes have a great responsibility in these changes, but it is undeniable that a renovated consciousness of the values involved in cultural issues has acted as catalyst. In this accelerated version of historical time, it is probable that what we have called reflexive heritage -the conscious and responsible assumption of creativity in cultural heritage- might play an active and positive role promoting engagement and identity for audiences everyday more diverse, sensible and complex. Dynamism is going to be for sure a characteristic of the new cultural panorama that is being re-mapped right now away, but not independent, from the traditional centers of cultural dominance.



Figure 5. Arish buildings in Fujairah, United Arab Emirates, 2014.



Figure 6. The Nomad by Khalid Shafar, Dubai Design District, UAE.

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Progressing a university-industry collaboration (UIC) model for open and sustainable innovation

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ABSTRACT

This paper describes the implementation and progress of a university-industry collaboration (UIC) model, developed by the ipd-r research group at the University of Technology Sydney, to advance the competitive strength of small to medium manufacturing enterprises. The Integrated Product Design Research (ipd-r) UIC model opens up the innovation process and fosters engagement between industry partners, design academics and, in a unique way, a large cohort of undergraduate design students. Incorporating a diverse range of perspectives via methods of practice, the model explores short to medium-term outcomes for the industry partner over a series of iterative engagement cycles, over a 2-3 year term. The research reported here focuses on the first iteration of the model that incorporates a strategically planned exercise through two industry projects that generate a diverse range of innovative concepts. These concepts are collectively analysed both by the academic team independently and in collaboration with the industry partner for R&D planning and to inform the second iteration of the model. The research indicates that the ipd-r UIC model does successfully overcome some of the barriers previously identified with other forms of UIC and that the strategic management of conceptual development in an UG design subject by academic design practitioners, offers constructive open engagement for a participating manufacturing SME, otherwise inaccessible for them. Significantly, the results provide both short-term and medium-term strategic innovation directives for the SME and represents a way for manufacturing industry to learn how to develop innovation strategy and engage research for competitive advantage.

Keywords

university-industry collaboration, design-driven innovation, small-medium manufacturing industry

INTRODUCTION

The Integrated Product Design (IPD) program at the University of Technology Sydney has long standing relationships with many industry partners including local manufacturing SME’s. The ipd-r research group formed in 2014 by staff members in the IPD course has set one of its objectives to support innovation development in local manufacturing SME’s, through a combination of research and practice-based initiatives. Research has found that the utilisation of design in SMEs must overcome many barriers including, but not limited to, seeing design innovation as a company-wide strategic function and overcoming a risk adverse culture (Doherty, Wrigley, Matthews and Buculo, 2013). It has been suggested that knowledge transfer that enables external design research units and partner companies to establish trust and translate data into value propositions may only be achievable over extended periods of time (van der Bijl-Brouwer and Buculo, 2014). Additionally, and importantly, Bruneel, D’Este and Salter (2010) describe another possible barrier regarding knowledge exchange to broadly include differences in incentives and orientation where universities tend to be ‘pure science’ oriented with long-term goals compared to the urgency of implementable industry research. The ipd-r UIC model was developed in 2015 to account for these constraints and has been described by Walden and Pandolfo (2015) in a DesignEd conference paper that year. This paper reports on the first phase application of the model with two industry partners. Selleys Australia and Glarce Australia. The Selleys company was formed in 1939. The Selleys Chemical Company, as it was then known, specialised in unique ‘putties’, though by 1959 the company had expanded into adhesives, sealants and decorator products. Today, Selleys is a world-class company, developing well-known products for the DIY home improvement and trade market. Committed to innovation, Selleys approached us to work with them on the development of their innovation strategy and to explore ways of leveraging their brand and technical competencies in new ways. Glarce Australia was formed by Simon Larcey in 2013 and has developed into a strong sunglasses brand. Glarce prides itself on developing products that are Australian designed and made, in high quality materials, to a very high standard. The company actively supports young creative people through design competitions it holds every year, and has worked with the UTS IPD program for a number of years on student design projects.

The ipd-r UIC model

An opening up of the innovation process through external research support for small to medium manufacturing enterprises has been recognised as an important factor in the enhancement of innovation performance and processes for new product development in those organisations (Malik and Wei 2011, Lasagni 2012). Australian manufacturing SMEs are recognised as having the ability to innovate and contribute to the knowledge economy (Viet and Valadkhani 2014). Further, manufacturing generally is considered integral to the technological development of advanced economies (Benedettini et al. 2010) and an important contributor to the Australian economy (Doherty et al. 2013). However, it is considered that manufacturing SMEs do not have the competency or resources required for design-driven innovation (van der Bijl-Brouwer and Buculo, 2014). The ipd-r UIC model (Figure 1) developed in September 2015 (Walden & Pandolfo, 2015) makes actionable a UIC collaboration strategy for advancing the competitive strength of small to medium manufacturing enterprises. Developed by the Integrated Product Design research group, the ipd-r UIC model has been designed to open up the innovation process by engaging industry, academics and design students to support an SME's innovation strategy. As shown the model is intended to operate over a 2-4 year term and responds the research that identifies barriers to successful university-industry collaboration. We also consider the model as a contributor to the discourse around the topic of academic design (Walden, Pandolfo, Lie & Lockhart, 2015; Dorst, 2016) in ways that will be expanded upon later in the paper. With the intention of building upon existing industry partnerships by providing both short and medium-term outcomes for the manufacturing SME, the model broadly adapts research on design-driven innovation (Verganti 2009), practice-orientated learning (Lie and Walden, 2015), design for social values (Teixeria 2010) and the management of problem reasoning and process without methodological prescription (Goldschmidt and Rogers 2013, Dorst, 2015). Critically, the formation of the model has taken into consideration the problems with other UIC innovation programs while at the same time engaging the tremendous resource provided by our student groups, encouraging a wide diversity of interpretations and the capacity to explore more complex parameters of the design opportunity on behalf of the industry partner.

The ipd-r UIC model requires projects to be set-up carefully so that compatibility between the program's core subjects (and associated learning objectives) and the innovation potential of the industry partner can be established. Though the industry partner may hope for short-term, low-cost and low-risk gain from having design students develop a series of concepts for them, the key goal is to analyse the innovation concepts collectively (not only individually) in order to identify patterns in response for wider strategic consideration. At the start, an approach for application of the model and the associated UG design project (the small black squares depicted in Fig. 1) is developed in consultation with the industry partner. The model is designed to be low-cost and low-risk to help match some of the key expectations of the industry partner, a factor in successful UIC design-driven projects (Doherty et al. 2013). And balances the opportunity for short-term and medium term outcomes by operating over a longer term so that collaboration experience and a range of interactions can be achieved to lower some of the barriers associated with UIC (Bruneel et. al. 2010). The project uses design-driven innovation

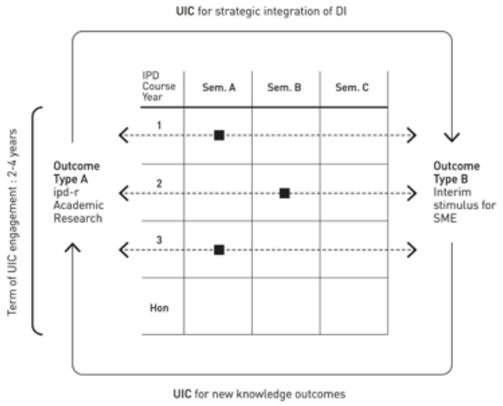


Figure 1. ipd-r UIC model developed by Walden & Pandolfo, 2015

(Verganti 2009) and research on the nature of radical innovation and meaning change (Norman and Verganti 2014) as a foundation together with analysis of the industry partner - their brand, products, manufacturing competency, market, customers, etc. A proposal is brought together around an appropriate integrated product design UG subject incorporating research on problem framing (Dorst 2015), learning and reflective practice (Kolb and Fry 1975); and design thinking (Brown 2009, Dorst and Cross 2001). The design project plan is presented to the industry partner to a) inform them of the process both short and long-term and b) create a stage for productive participation in the project. The conduct of the project is designed to support the students in the development of novel designs that represent potential innovation directions for the industry partner - designs that may not be expected, but are culturally relevant and potentially part of a future eco-system of products and services for the industry partner. Across such a large and diverse group of conceptualisations there are some that are deemed immediately commercialisable and some that are highly speculative, representing a very diverse and complex set of opportunity. The value of the strategically planned exploratory exercise can only be defined by analysis of all of the concepts, essentially the collation of results data, both by the academic team independently and in collaboration with the industry partner. The project indicates that the ipd-r UIC model does successfully overcome some of the barriers previously identified with other forms of UIC in a mutually beneficial and sustainable way. Additionally, the strategic management of conceptual development in an UG design subject by academic design practitioners, offers constructive open engagement for a participating manufacturing SME otherwise inaccessible for them. The results provide both short-term and medium-term strategic innovation directives and the basis for continued engagement with the University with an evolved set of objectives. Significantly, the model represents a way for manufacturing industry to learn how to develop innovation strategy and engage research for competitive advantage.

Open Design, Design Thinking and Design-Driven Innovation

The ipd-r UIC model is a mechanism to embrace open design for engagement. Devised as a means to support industry and the development of research concurrently over a 2-4 year period the IPD research group understand that there are conflicts that exist between the objectives of external research units and the concerns of industry that design thinking and design-driven innovation alone, cannot overcome for meaningful knowledge transfer. And ultimately, as the model proposes, knowledge transfer must be two-way and over multiple engagements and extended periods of time, enable the SME to run its innovation strategy independently of external support. Verganti's design-driven innovation (2009) provides a definition for innovation - emotional and symbolic meaning change - that is useful for involving manufacturing SMEs that pride themselves as product developers. It serves to form the basis for exploring a company's core competencies and critically examine the market space in which they currently compete and other potential markets where their know-how may be applied to disrupt a given status-quo. Design-driven innovation also sets attainable objectives for projects set in tertiary product design education, where the degree of novelty for new designs can be gauged based on the nature of the meaning change identified through research including the realisation of the concept in physical terms based on dialogue with external interpreters (normally via interviews or multi-disciplinary teams). Design-driven innovation also, requires designers to conduct research that builds on their personal culture which can be a welcome gateway for novice designers to begin to diverge. Care must be taken, however, not to place all emphasis on design-driven innovation as Verganti describes it. Design-driven innovation may place too greater emphasis on so-called 'visionaries'. And novice designers must learn to make more humble contributions and embrace learning. Here is where design thinking, and important associated interpretations and research such as problem framing and reasoning (2011), forms an important companion. Design thinking is not exclusively concerned with products and manufacture, but on critically examining through an iterative continuum of practice the nature and development of the problem being addressed by design, to refine ideas and explore new directions (Brown, 2009). As such, it can embrace a social context and encourage the development of designs that benefit humanity in ways that design-driven innovation may struggle given its focus on competitive advantage. Design thinking advocates exploration, iteration and the opening up of the design process so that many voices can participate in the development of an organisation's innovation strategy.

Innovation and Iteration

Innovation has been referred to by Brown (2009) in design thinking as a series of overlapping 'spaces', in the first instance incorporating inspiration, ideation and implementation and in the second instance in terms of competing constraints, desirability, feasibility and viability. The ipd-r UIC model seeks to challenge predictable boundaries because we're interested in exploring a diverse range of opportunities for the benefit of identifying new ways forward for the industry partner and to better understand (from an academic standpoint) interpretations of innovation in university-industry collaboration. Therefore, in the student project, we default to Verganti's design-driven innovation theory to address questions of desirability (what makes sense to people and for people) and try and relax some of the conditions around feasibility (what is functionally possible within the foreseeable future) so that the 'problem space' can be openly explored. An interesting test for the model in terms of addressing an industry partners' short-term expectations when it comes to UIC is viability - described by Brown (2009) as 'what is likely to become part of a sustainable business model'. Preliminary evaluation of the concepts (at the completion of the student project) in terms of viability, does not specifically require a concept to be (itself) manufacturable, but rather point to a strategic direction that may encompass innovation across the business in many potential ways.

It has been found that successful innovation can be traced to ideation (Brophy, 2001) which is the formation of creative and diverse ideas (Liu, Bligh & Chakrabarti, 2003). And, research suggests that the diversity required of well-executed ideation is highly dependent on the disciplined 'movement' through cycles of convergent and divergent thinking throughout the design process (Yilmaz & Daly, 2016). It has been suggested that successful concept generation that leads to innovation requires the generation of multiple and diverse concepts (Daly, Yilmaz, Christian, Seifert & Gonzalaz, 2012). Therefore, in development of innovation either as products or strategies (or both) for the industry partner, we utilise the diversity and scope of our student cohort, expertly guided by experienced practitioners and academics, to generate this diversity.

Findings

The model incorporates the design and development of many student projects supported by academic and industry-based design professionals and the evaluation of those projects with the industry partner to identify both new potential innovation directives for their organisation and the establishment of the objectives for the next iteration of the program. The following section includes samples of design projects for two companies Selleys Australia and Glarce Eyewear. Presented are the outcomes of analysis of concepts for both Selleys and Glarce, delivered by eighty-one (81) students in the subject. A particular lens on the diversity and type of innovation developed by students provides an important indication of the value of the engagement with each manufacturing SME. The following section presents information on each project and then discusses key correlations.

Selleys Project

Analysis of all of the Selleys projects collectively (Table 1), indicates potential opportunities in sixteen market areas. The company primarily competes in five of the above markets (home DIY, hardware, trade, construction and automotive) currently. Therefore, the project has produced concepts that propose to leverage the Selleys brand and technical capability to compete in eleven new market areas. Nine (9) of those new potential market areas have been identified with concepts that provide viable radical innovations and / or incremental change innovations. Additionally, the data indicates that a large number of concepts

identify viable innovation potential within the company's primary market focus. Considering all eighty-one concepts developed, thirty-nine (39) are considered to be radical innovation designs (48%) and forty-two (42) are considered to be incremental change innovation designs. Reviewing the projects more critically, eight (8) of the radical innovations are considered viable and nine (9) of the incremental change innovations are considered viable. A process for reviewing those concepts considered more speculative (mostly in terms of technology) is ongoing. The insight provided by these types of concepts is valuable, but must be tested in future iterations of the ipd-r UIC model.

	Potential or intended market	%	V-RI	V-IC
1	Home DIY	24.7	•	•
2	Hardware	19.7	•	•
3	Trade	15.2	•	•
4	Stationary	7.6		•
5	Toys	5.6	•	
6	Services	5.1	•	•
7	Maker	5.1		•
8	Construction	4	•	•
9	Art	4		•
10	Automotive	3		•
11	Fashion	1.5	•	
12	Medical	1.5	•	
13	Clothing	1	•	
14	Gardening	1	•	
15	Sports	0.5		
16	Kitchen	0.5		

Table 1: Potential or intended markets that Selleys design concepts may compete. The table lists the percentage of concept outcomes designed for each of the sixteen markets identified across all project submissions. Additionally, for each market, the table shows if V-RI (viable radical innovation) and V-IC (viable incremental change) designs are represented in the concept outcomes.

The Selleys organisation has expressed interest in seventeen (17) of the concepts developed in this project. Here we discuss two examples that both the Selleys team and the IPD Academic team agree, may be good candidates to develop further.

'My First Selleys' is a children's adhesive applicator with a roll-on, non-toxic glue for craft exercises. The design identifies the potential for Selleys to use their chemical engineering know-how to develop high-performance glues safe for children to use. Additionally, there has been a revival in children's craft with popular programs such as Mister Maker. A number of concepts considered toys and toy-based construction as a potential avenue for Selleys, given their expertise in adhesive technologies and their likely ability to develop glues of good performance for the children's toy / education market. More broadly, the concept of developing adhesives and fillers that are child-safe and suitable for craft activities for play or education opens up opportunities for strategically collaborating with toy companies and or expanding upon their own knowledge-base regarding toxicity reduction measures in the development of high-performance chemical adhesives. 'Otoplug' is a handheld glue-gun that specifically ejects a plug of adhesive into a pre-drilled hole in a wall. The adhesive is soft when first ejected into the hole and both compensates any inaccuracies that may have occurred in the drilling of the hole and, upon cooling, provides a firm material into which screws may be secured for mounting items to the wall. A product designed for the DIY market, Otoplug considers the divide between Selleys professional (trade) products and their DIY products. Selleys excellent adhesives can be made available to the home renovator, but often skill in application is the problem. The DIY market is an important segment for Selleys, and this concept (and many others developed in this project) may highlight the importance for Selleys to devote more resources to understanding how to make application of their products more accessible to the inexperienced user. The concept also demonstrates that this endeavour is not simply about repackaging or reformating their professional products, but designing new adhesives and fillers with new applications in mind.

Glarce Project

Analysis of all of the Glarce projects collectively (Table 2), indicates potential opportunities in eighteen market areas. Currently the company only manufactures sunglasses, so may be said to be competing two of the markets tabled above - sunglasses and fashion, with perhaps a secondary influence in travel and beachwear.

	Potential or intended market	%	V-RI	V-IC
1	Sunglasses	14.6	•	•
2	Fashion	14.6	•	•
3	Travel	12.6	•	•
4	Beachwear	10.8	•	•
5	Health	10.1	•	•
6	Public Safety	9.4	•	•
7	Prescription Eyewear	7	•	•
8	Medical	4.5	•	
9	Audio	3.8	•	•
10	Cycling	2.8	•	•
11	Luggage	2.8	•	•
12	Kidswear	2.8	•	•
13	Surfing	1	•	
14	Camera	1	•	
15	Portable Energy	0.7	•	
16	Ski	0.7		
17	Rock Climbing	0.4	•	
18	Footwear	0.4		•

Table 2: Potential or intended markets that Glarce design concepts may compete. The table lists the percentage of concept outcomes designed for each of the eighteen markets identified across all project submissions.

The results indicate that there may be opportunities for Glarce to leverage its brand to compete in fourteen new markets. Though, unlike Selleys, Glarce may need to more seriously consider corporate partnerships or licensing to have the technical capability to compete in many of those markets. Considering the fourteen new potential markets thirteen (13) of those have proposed concepts that are deemed to be viable radical innovations and / or incremental change innovations. The research also indicates that many concepts (29.2%) include viable innovations within the company's own key market areas. Considering all eighty-one concepts developed, thirty-seven (37) are considered to be radical innovation designs (46%) and forty-four (54%) are considered to be incremental change designs. Reviewing the projects more critically, twenty (20) of the radical innovations are considered viable and seventeen (17) of the incremental change innovations are considered viable.

There are additional, more speculative, concepts that are currently being reviewed. As with the Selleys project, some of these concepts may set-up the brief for new projects in the second phase application of the ipd-r UIC model. Glarce has expressed interest in a number of these concepts for development in the short-term. Below are two examples that both the Glarce and the IPD Academic team agree, may be good candidates.

'Water sunglasses' is a configurable pair of sunglasses for the sea. Glarce develops sunglasses with Australian beach culture as a central focus, though combining high-market eyewear with the rigors of sand and water-play is a difficult selling point. These sunglasses can be configured so that they can be secured comfortably to the head and face when in the water. When you leave the water, the frames can be transformed so that the glasses adopt a stylish conventional form. Glarce prides itself on a simple, 'clean' aesthetic and traditional craftsmanship. There were a number of concepts that attempted to provide this function and many that explored configurable frames, but this concept stands out as one that manages to provide the right level of configurability so that the Glarce style and 'look' can be maintained. Glarce had long expressed an interest in configurability, customisation and additive manufacturing technology. The project has, through this concept and many others that identified that degrees of customisation may be desirable, provided a lens through which these functions may be best incorporated by Glarce, given its brand image, standing in the market, and technology. 'Anchor' is a rescue band for surfers. Considering the connection Glarce has forged between its eyewear and Australian beach culture, a compelling avenue is to extend upon the concept of 'protection'. Sunglasses are indeed a fashion item, but more importantly, they protect eyes from the harsh sun. Glarce invests in very high-quality lenses though it does not feature prominently in much of their marketing. There were many concepts that considered UV protection as a possible avenue. This concept proposes a rescue band for surfers to alert surf lifesaving or other nearby emergency services if they are in trouble. The concept styled by the student (who is a surfer) operates discretely and is fashioned to appeal to the surfing market. The technology, though not currently used by Glarce, is accessible and implementable - the Anchor rescue band only has one function. The novel aspect of the design is the way it simplifies functionality and uses technology inexpensively in a wearable that understands the attitude of surf culture. Broadly, it highlights for Glarce the opportunities in developing its brand to embrace a wider scope beach lifestyle and some of the more serious aspects of catering for the Australian market.

Glarce has also expressed interest in investing in the development of some of the more speculative concepts as a promotional lever and to extend upon the development of their young designer support program - the Glarce Academy.

Study Limitations

The ipd-r UIC model (Walden and Pandolfo, 2015) is intended to be used iteratively with a manufacturing SME, and with each application, the design project is located appropriately in subjects in the IPD course, to support the advance and understanding of the SMEs innovation strategy. Each time the model is used, the project is framed in a more targeted way. This paper reports on the first iteration of the ipd-r UIC model where an open-based exploration of potential product opportunities are suggested and reviewed. Despite our instructors being highly qualified industry professionals and practiced design tutors, the student group working on projects for this first iteration are second-year IPD students, most between the age of 19-25 years. As novice designers, fixation on first and obvious ideas (Cross, 2001; Jansson & Smith, 1991) is a factor and while it has been suggested that industrial design instructors tend to focus more on convergence (Yilmaz, 2015), divergent thinking was supported in studio, particularly in the first three weeks of the project. However, the study does not actively measure the degree of fixation evident - to do so, would require two control groups (an interesting consideration).

Conclusion and Further Research

The ipd-r UIC model, in its first iteration produces a wide range of concepts that are diverse and that incorporate innovation. The range and diversity of proposals, developed by students with guidance from industry professional and academic product designers, provide the basis for ideation and potentially further innovation as suggested in research by Daly, Yilmaz, Christian, Seifert & Gonzalaz (2012). The range of concepts produced also clearly identify both short and medium-term innovation directives, where some concepts have been identified by the industry partner as immediately marketable and review of the concepts collectively identify potential markets and strategic directions for the company. Both Selleys and Glarce are very pleased with these first-round results as deeper analysis of the data continues collaboratively. We intend to map the results of this UIC project with existing research from the industry partner to identify potential correlations to be tested in a second iteration of the ipd-r UIC model through a new project, with a new objective. Review of the performance by the students has identified the importance of managing fixation and iteration deficit during the project. A new paper to be published in December titled 'Identifying and reducing iteration deficit in product design projects' has been written based on research by Nemme and Walden (2016). It identifies the connection between iteration, ideation and innovation and draws upon design education research to propose a model for managing iteration and the application of research methods to support innovative product design by tertiary design students. Lastly, we consider the ipd-r UIC model and the its function in understanding the evolving relationship between university design research and industry-based design practice a contributor to the concept of 'academic design' (Walden, Pandolfo, Lie & Lockhart, 2015; Dorst, 2016). Dorst identifies the integration of design practice and research as a critical step in reducing the 'gap' between industry and academia by creating works that can be accessed by both. Additionally, Dorst proposes that 'academic design' may be a new hybrid that aligns the objectives of industry and research, and where such a hybrid operates with the dual function of applying theory to a real-world problem and the conduct of a design experiment, derived from academic discourse, translated into an 'action'. We consider the ipd-r UIC model as a model for academic design.

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Design charrette: co-creating design possibilities with heritage craft

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ABSTRACT

This paper discusses how multidisciplinary groups approach co-creational design possibilities through craft, potentially moving from shaping the future through individual design practice to making sense of the future with the help of co-creators as they do. (Sanders and Stappers 2014) It reports on observations from a recent Design Charrette on Scottish basket making where makers, designers, architects, engineers, heritage specialists, curators, academics and design students attempted to co create heritage craft practices within a contemporary design context. Multiple data gathering methods illuminate how these heterogeneous actors (Emilson and Hillgren 2014) contribute and negotiate different ideas and maker practices, and how they resolve conflict in order to "open-up" design possibilities. By envisioning the complex relationships people build with each other and with the material and object cultures in the fuzzy front of end of the design processes (Sanders and Stappers 2008) the paper discusses how new communities of practice may emerge from people who have different ways of knowing and doing. Furthermore, it explores how co creational and participatory methods contribute to convergences between heritage and design.

Keywords

design-craft-charrette, co-creation, heritage

INTRODUCTION

In the past four to five decades, scholars have developed a myriad of new approaches to design in order to engage with everyday practices and experiences in a meaningful way, including emotionally. (Sanders and Stappers 2008, Mattelmäki et al. 2014) Methods and techniques have evolved from participatory design to user-centred designing and then on to co creational design activities. (Sanders and Stappers 2008) Novel approaches within the participatory and collaborative landscape emerged within both research and industry, with some considerable focus on collaborating amongst multiple actors towards creating sustainable futures, as i.e. in IDEO's social innovation, empathic design (Leonard and Rayport 1997,Mattelmäki et al. 2014), emerging and dialogic design for social innovation (Manzini 2016) transition design (Irwin et al. 2015) socially responsive design (Thorpe and Gamman 2011) and design anthropology.(Gunn et al. 2013, Gunn and Donovan 2012)

All these approaches acknowledge a changing landscape of design that is moving from shaping the future through individual design practice to making sense of the future with the help of co-creators (Sanders and Stappers 2014), while further agreeing on designs' need to take a holistic view that combines human, cultural, social, ecological and material values together with innovation and collaborative futuring.(Gunn et al. 2013, Irwin et al. 2015, Bjögvinsson et al. 2012) Notwithstanding the growing momentum in academia, the transformation of moving from designing 'objects' to designing 'social- material assemblies' (Bjögvinsson et al. 2012) is still a major challenge to many in the design community.

Collaboration and co-creation activities are not easily accomplished. As Palmås and Von Busch suggest, they are challenging as they pose dangers of asymmetries especially when designers "run the errands of power, where the participatory design process gets used to create coercion and sugar-coat autocratic processes with a shimmer of 'collaboration'". (Palmås and von Busch 2015, p237) Co-design then becomes an 'antagonistic process' (DiSalvo 2012) that could inhibit democratic participation, when different stakeholders with specific skills bring rise to tensions and power intricacies.

So, how can multi-disciplinary groups best share their ideas, and what really inhibits effective collaborations in the design process and why? These are some of the questions we attempt to answer in our paper, at the interface of heritage and design.

A variety of methods, tools and techniques have been suggested to facilitate such collaborative environments (Sanders and

Stappers 2014, Visser et al. 2005), and within this research, we decided on a Charrette to best explore the collaborative knowledge exchange between 'heterogeneous actors'. (Emilson and Hillgren 2014, Björgvinsson et al. 2012) Design already extensively uses this participatory method, but using such methodologies for craft and design research is lacking in pragmatic examples, as is practice based design and craft research itself. (von Busch et al. 2014) An opportunity was thus identified to explore a traditional craft practice (Scottish Basket making) and its interactions with design in the context of current heritage debates as Scottish basket making is understood as a vernacular craft practice, 'made by the people for the people'; a craft and a trade, where innovation coincides with tradition due to its improvisatory nature in the age-old making process. (Bunn 2015, p24) Thus, it is 'an open system' that provides room for experimentation, change and development (Bunn 2016, p135), in other words it offers potential to engage with heritage as "(…) past memories to negotiate new expressions and identities."(Smith 2006, p2)

To do so in a Charrette meant going beyond the standard trajectory of a consultation tool merely focusing on consultant-client relationships producing more user-friendly design solutions (Smith 2012, Howard and Somerville 2014) to a rather exploratory method of engagement amongst varied parties all invested in practices and theories of making, heritage and design.

Overview of the Charrette

Charrette Description

The Charrette was held as a one day activity, inviting participants from the heritage sector and creative disciplines. These included makers, designers, architects, textile engineers, curators, academics and design students. The aims of the charrette were to: a) observe how multidisciplinary groups co-create by exploring heritage craft practices within a contemporary design context b) provide an opportunity to monitor and evaluate varied approaches to design processes c) test whether an idea of shared design cultures empowers choices and design directions with people, material and the object cultures.

The session involved 23 participants who were recruited on a voluntary basis using an email flyer with a description of the charrette distributed via local creative and arts development organisations , and word of mouth through private and professional networks. The pre-requisite for selection was a general interest in Scottish basket making, a background in creative industries or interest in heritage. The reason for such an approach was to get insight into how multidisciplinary groups including the 'community' (Sarashima 2013) of basket making would interact, contribute and negotiate specialist meanings and values to a wider audience.

Charrette Format

The 23 participants were divided into 5 lots, and each team comprised of five or four members. The researchers distributed participants according to get maximum insights into how different stakeholders might work together in the charrette format. Information on the particular charrette format was sent out to participants some time prior to arrival to ensure initial understanding of what to expect on the day. Two facilitators gave structure to the charrette by maintaining and ensuring activities were kept within the set time frame. A neutral observer documented charrette engagements throughout, considering dynamics between team members as well as engagement with the facilitators and the basket maker.

The charrette was started off by one of the facilitators offering a brief history and rationale behind the format, followed by a demonstration of basic basket making techniques by the invited Scottish Basket maker. Her background as a maker as well as an educator enabled her to first share objects, materials, techniques and narratives of her craft theoretically, before practically instructing participants in two of the most basic techniques of Scottish basketry, namely coiling and weaving, using willow and rush. (See image 1)

Following on from this practical engagement, conversations were directed towards contemporary heritage discourse between place, artefact, behaviour and process in response to a short lecture on design innovation between tradition and invention, localism and international markets, culture and commerce by one of the authors of this paper, who is an academic in the field of design studies.

Only at this stage, was a brief given to the participants, which asked teams to design an object that reflected heritage and tradition and was inspired by what participants had seen, heard, and were experiencing about basket making practices during the charrette, with outcomes required by the end of the day. Participants were given generative tools (Sanders and Stappers 2014, Visser et al. 2005, Sanders 2000) including drawing material, flip chart paper, post-it-notes and coloured pens to create two-dimensional visual maps to three-dimensional artefacts. Participants were able to use from this stage onwards actual basket making materials and related resources, including willow, rush, fabric, wool, strings, wires and papers, so as to materially enable the context of basket making to meet contemporary design experiences of the participants.

During the actual design activity, each team's interactions, conversations and phases of design were recorded on multiple video cameras. To further verify and triangulate these digital recordings, facilitator notes and comments and observations from the neutral observer were collected. Upon completion of the workshop, an online survey amongst participants was undertaken to capture their attitudes towards this co-creational design experience surrounding heritage. Later in-depth interviews were carried out with willing members of each group to further enhance the understanding of the charrette experience. Once during the design activity, and again on completion, members were asked to present their ideas in a plenary session to the other teams. The format of a quick presentation during the design session ensured to capture "on the moment" responses and allowed us to evaluate how the design process changed over time.

[1] Socio-material assemblies are referred to a collective of human and non-human Things following Latour's expression. Bjögvinsson et al. (2012, p102)
[2] This is with the exception of the work produced by Tunstall (2013) within the fields of design and anthropology as she works with indigenous and traditional grassroots communities. i.e designer interventions with Aboriginal communities in Australia and craft communities in India. See http://theconversation.com/remixing-indian-design-anthropology-49188., other examples highlight the importance of craft for empowerment and social development (Palmås and Von Busch 2014) with the increased demand for craft and design research published through conferences like Making Futures that investigate contemporary craft and maker movements for the 21st century.



Figure 1. Demonstration of Scottish basket weaving by the invited maker

Charrette Findings

Each team adopted different approaches to the design and making process, and outcomes produced were also quite diverse. However, all teams developed valid concepts and discourse towards what they believed could be transformed into a tangible output in response to the brief. For the purpose of this paper's focus on procedure rather than outcome of a design craft charrette, the online survey will be analysed as to the overall reception of the charrette, with a comparative analysis of the workings of two teams analysing two completely different approaches to team work and resulting nature of output.

Questionnaire responses

19 out of 23 participants responded to the online survey, making the response rate a very respectable 82.6%. The online survey consisted of 8 five point likert scale questions with 2 open ended questions providing more qualitative insights. Chart 1 provides the overall response rate to the likert scale questions. (See chart 1)

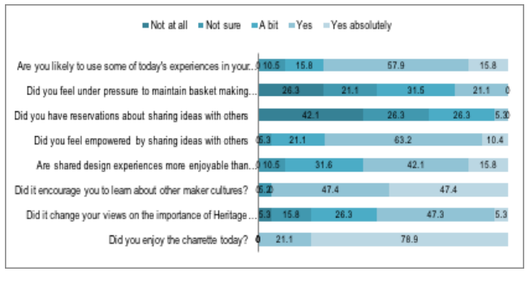


Chart 1: A Summary of the Likert Scale Data

The analysis and comparison of the data indicates that all the members had enjoyed the charrette experience with 52.6% emphatically changing their view on the importance of heritage and a 26.3% changing it at least a bit. An overwhelming 94.8% stated that the charrette encouraged them to learn about a new maker culture. A clearly identifiable outcome was that the vast majority of participants enjoyed the collective design experience as opposed to the individual maker cultures that is a common reality in designer maker practice and assumed and advanced in most design education. (Fry 2015, p418) While 73.6% agreed to an empowerment by sharing and engaging in collaborative design activities, 31.6% of respondents declared definite reservations in sharing their ideas with a further 26.3% undecided.

This overlap between about a quarter of charrette participants experiencing empowerment through ideas sharing yet having reservations to do so offers insights not just into the behavioural barriers to collaboration for professionals from the design field, but also for the power of the craft or making process to overcome these in practice. Almost four fifth (78.9%) of respondents said the collaborative experience inspired their design process, and three quarters (73.7%) mentioned the inspirational nature of stories and narratives shared by the basket maker as influential to their design process, with almost five sixth (84.2%) of participants mentioning material experimentations as one of the most influential factors in their design process. This was further evident in the answers to the question: What is that one thing you will take away from the charrette today?: Collaborative experience (36.8%) was here closely followed by experimenting with new materials (31.6%), a new skill (21.1%) and other (10.5%). Making related aspects (material and skill) were therefore mentioned by over half (52.7%) of the participants, with just under a third (31.6%) rating collaborative experiences more highly. The results from our charrette therefore shed light on what craft could provide 'as an approach, an active attitude, and the ways that one goes about thing and [the] ability to challenge perceptions'.(Marchand 2016, pi) The outcomes offer insights to design in that we can see working through material as a bodily practice, a way of problem solving from 'moment to moment', (Bunn 2013) proving that 'design lies in the act of making and in makers in action' (Bunn 2015, p39). The results promote the idea of sharing with people materials and environments (ibid), showing how craft can be an 'open system' (Bunn 2016) and a 'generative toolkit' for the design process. Much akin to the aims and objectives of using generative tools to express thoughts, feelings, and ideas (Sanders 2000); the collaborative craft making experience generated narratives, stories and ideas that were driven by material and making.

In order to analyse the varied approaches to idea generation in our basket making charrette, in terms of interacting with people, materials and ideas, we will now compare two of the participating teams. Mapping their activities through our detailed observational notes and video footage promises to improve our understanding of their entire design process, and demystify the complex interactions between collaborative craft and design.

Comparing two teams

The (self-named) teams "No boundary" and "Krafty Kollective" were selected on the basis of well legible video and notes based observational data being available on their charrette activity. The members of the team represented the following backgrounds.

Team No Boundary (NB) - An academic practitioner in knitting, Curator in arts development and management, Textiles Weaver

[3] Creative Arts and Borders Network, http://www.cabn.info/
[4] In heritage discourse, the idea of 'community' is considered integral where an inclusive and a collaborative approach to heritage management are promoted including the multiple stakeholders' viewpoints as well encouraging bottom-up approach. (Clifford at al. 2004, Stefano at al. 2012) Sarashima (2013) recognises producers, practitioners, consumers, policy makers, the state, educators of heritage craft practices as its community- considering both the "'lifeworlds' of the practitioners of the cultural form and appreciators of that cultural form" (p138). Hence, the community is not the just its makers, but all contributors or else its public who shape the social, economic, cultural and political aspects of the environment where the heritage craft reside.

(PG Design student), Knitter (PG Design student)

Team Krafty Kollective (KK) - An academic practitioner in textiles design, A designer maker (knitting), Fashion designer (PG Design student), Textiles Weaver (UG student)

Mapping the Design Process

The emphasis of the observational note taking had been on key stages and type of knowledge exchange activities, while the video captured all activity during the day. When transcribing conversations, we paid attention to the turns taken by each member, in order to understand dominant discourses and dominant roles that emerged within teams. The information and the context of conversations were complex and fragmented as team members at times moved around the room, especially to look for materials and sources of inspirations. We were able to capture these movements and conversations via multiple cameras around the room. Following the initial analysis of the online survey, two members from each team were approached to further probe their experience of the charrette and to capture in-depth knowledge of their personal experiences in terms of group dynamics. The interviews were useful in filling the gaps in the transcribed data and to triangulate the data sets generated.

Observations and Comparisons of the Team Activities

After the demonstration of basket weaving techniques and materials by the Scottish basket maker all members got back into the teams and further discussed the ideas and material experimentations they had already started.

Analysing the Team Krafty Kollective (KK)

Team KK initially approached the design process purely through material experimentation, but soon moved on to understand and utilise the specific background of its members. Collectively, members of the KK team tried to dissect the brief to gauge what it was about: "…getting inspired from basketry, but it does not mean that we have to make a basket as such, but utilise the materials and anything else that's given. So it doesn't matter what we create at the end right?" (Lindsay)

This led the team towards an open ended approach to designing, while moving away from an object-led design approach from the beginning.The members decided to refrain from solving a problem, preferring to design an object that has a function which could be utilised for problem solving later. It was after this discussion they brought their focus to 'Heritage'. Some members grappled with the concept of heritage and what it actually meant, but soon their conversations on each other's background suggested the significance of place-based heritage as all of the four members were of Scottish origin. It then directed the conversation towards building relationships with their life transitions in relation to place, and particularly the idea of rural and urban. They soon connected with the idea of 'personal heritage', having lived in large cities as well as growing up and moving back to rural settings. Each member also explained what heritage meant to them in their own discipline. The fashion designer contextualised heritage as rustic, rural as a concept harking back to the past as opposed to modernisation as she explained: "I was looking at the traditional rustic founding (sic) and compare it with the stylistic city, anecdote." (Ruth)

The heritage discourse on place-based, personal heritage, the old and the new, here directed their design process towards representing the 'Contrast', 'Change' 'Scale', 'Utility' and 'Function' that could represent their transitions and reflect a urban –rural divide. The next stage of the design process usually requires planning and making (Austin et al. 2001), but a decisive decision was taken by all members to omit the planning stage and move on to the hands-on making as they suggested 'design alters (sic)', thus should be informed through spontaneity and experimentation.

Progress towards the eventual team output was in actual fact, however, generated as much through discussion as it was through practical experimentation, as their diverse backgrounds as weavers, knitters and fashion designers led to the idea of designing distinct components/ containers or 'pockets', that echoed their wish to contrast urban and rural, and addressed desirable futures through multifunctional, multi-purpose and 'endless uses':

"But urban to rural we can cover using contrasting materials…. Add something metallic or something that has different feel to it." (Lindsay)

"Inside moving urban to rural you could carry things in it, not necessarily a basket but you make something that's like kind of an urban back pack, something contemporary… or do we make something that can transport-that need to be in both environments. So we have like a big bag that's got an iPad or iPhone and it also has something that you might need for your rural picnic" (Collette)

"Like a tool bag?"(Lindsay)

"So are we making lots of pockets that would become a bag?"(Collette)

"Yeah utility" (Ruth)

"Yeah everybody loves pockets…. If we make a lot of components of things then we can bring it together later."(Beth)

The tangible outputs of making components of different sizes were then linked back through discussion of Scottish heritage of different consumer goods like tartans, short breads and oat cakes; in their own words 'cheeky Scottish heritage'. During the making process the team adopted an iterative approach of considering what can be achieved through materials provided, but guided the formation of actual objects equally by conversation on heritage aspects.

Only during the making phase did each team member take an individual approach to designing as they concentrated mainly on their own contribution to the final piece. Observing each other's designs at this time allowed transforming their individual ideas and skills into a collaborative design process as a whole, and as one member introduced origami folding while another used techniques 'invented on the spot', problem solving as a co creational activity emerged as a key outcome. Throughout these individual stages of their project, and during final assembly of the collaborative output, the team used material explorations, at times supported by the professional basket maker, as the key way to progress their work. When reviewing the dynamics of their own team, the interviewed members reported that they were able to communicate and work well because they displayed a 'like mindedness' to the design process.

Analysing the Team No Boundary (NB)

Team NB initially approached their design process by exploring the properties of the materials of rush and willow. Each member tried different ways of coiling and twisting rush and this influenced the other members to explore more of the material possibilities in terms of forming shapes. The brainstorming and idea generation phase took the longest in their design process as all members collectively tried to visualise how the design could be linked up with the characteristics of materials. Much of the discussions were thus material driven and the project driven objectives also directed their approaches to design. One of the initial decisions for the team members was to 'keep us all busy' and this influenced towards a type of design where everybody's contribution was valued equally as part of a co-creational activity, but also towards a plan on how to divvy up the work. From the mapping of ideas in the initial stage of the design process, the group members derived key ideas to explore. They debated whether to create a merely aesthetically pleasing object or to incorporate function, and soon the ability to actually make any planned object, and the limitations of the materials became key concerns for further investigation.

"So you have sort of a base of these components rather than actually having sort of vertical things that you could join together (Trying to visualise the object to others)" (Louise)

"Yeah, I think the shape may be dictated by what we made at entry."(Angela)

"Yeah and then you could bring in other sort of materials to see how it joins up and open."(Lindsay)

"Then it kind of go against this? (Showing the mapped ideas)"(Angela)

"No it can't because we don't know what it is yet."(Lila)

"I think you don't know how it's gonna go until you try something."(Angela)

One of the concerns that emerged in the discussions was how to connect the 'open-ended' design possibilities with heritage discourse. When closely observing the entire conversation it is apparent that heritage discourse was always at the periphery in the discussion in Team NB. It was implied that heritage should not be something that needs critical attention, but it would organically develop within the design process as it progresses, irrespective of the fact that the team consisted of participants of multicultural backgrounds. (Scottish x2, American and Brazilian)

"It is possible that it fixes all the elements like culture, heritage, tradition and function and different parts of the world when try it all together. So it integrates all as a component. I think we can then link it to heritage."(Louise)

In the conceptualisation phase of the design process, the team continued to have lengthy discussions around time limitation, availability of materials, characteristics of materials, functionality and the usability of the object. Once the process of idea generation became complex and conflicting, the members soon moved to draw their ideas as 2D sketches. This seemed helpful for the team members to visualise their ideas and develop 3D prototype paper structures. The 2D sketching and 3D prototyping triggered conversations between members as they all considered this process as quite useful in suggesting new possibilities based on developmental sketches.

"I think we kind of have a hybrid approach. Make a plan and then start working on it and then decide to may be revise the plan."(Lindsay)

"It's an interesting process isn't it?"(Louise)

"Yeah, I think it came together nicely." (Angela)



Figure 2. The changeable and multifaceted receptacle

This extensive planning of the design allowed team NB to develop making approaches to the design development process that did not yet involve craft materials.

Team NB's understanding of heritage and tradition were largely based on the material culture, specifically with regards to being inspired by natural materials and using traditional Scottish basket weaving techniques. Connecting traditional use of materials to a contemporary design were thought of as a way of connecting the past to the present and the future use of heritage. Being 'planners', as they called themselves, their designs were driven by process:

"So we planned to a certain stage and tried to come up with the most effective and efficient process, how to make in a way that

we all felt that we all needed to be making at the same time. And however that might happen. We were also open to being led by what happens along the way…evolving and changing as we go through" (Angela)

The final object they made was a "multi-faceted" and "changeable" receptacle, which can be folded as a container and also used as a wall hanging. (See image 3) In their design process, they were adamant to not use synthetic materials, and wanted to maintain the 'authentic' uses of natural materials. During the process of designing, problem solving was at the heart of their discussions as one stage would dictate the next stage of the design phase and also iterate. When constructing the petal shapes of their vessel they struggled to find the solution to the base of the vessel but soon decided to move on finishing the petals and then decide how to design the base on the outcome of the petals.

With regard to the group dynamics, 'all team members were equally engaged in every step of the process, every one's opinion seems valued and considered'. (Neutral observer comment) While analysing the video documentary it can be seen that planning dictated their process at an early stage, but it also gave confidence at the execution phase as the members could relate to the possibilities of the outcome. 'Inevitability' created an excitement within the members and this spontaneity was much appreciated by all. All members contributing towards making a single object brought cohesion into the team to keep up with each other and also to communicate more effectively on each attempt they made. It also gave opportunities to explore and bring members' own skills and knowledge of their respective discipline to add value to the design, e.g. when employing knitting as a closure to the vessel. Team NB also maintained a close relationship with the expert basket maker to review the techniques used to realise their intended design.

Summary and Conclusion

The charrette experience provided evidence on how variedly multi-disciplinary groups may engage with a collaborative design process centred around craft making. Considering the detailed observational data on Team KK's and Team NB's design processes, it became apparent that vastly different approaches to making and collaboration had been adopted: While the former team spent little time planning the actual design but afforded much space to debating the heritage implications of the brief, the latter was mainly driven by intense initial planning and an iterative approach to design, with less consideration for the heritage aspect. Team KK collaborated intensively on the heritage context provided, and worked largely individually in their material experimentation towards finished objects, while team NB worked more individually in the initial stages as each member explored the material, before entering into a phase of intense collaboration towards the overall design solution.

The survey analysis confirmed that everybody who took part in the charrette enjoyed design by process rather than design towards outcome, and both teams observed here in detail enjoyed the 'spontaneity' of the design process as it delivered a sense of openness and momentum to evolve as they designed. This corresponds to finding the 'serendipitous insights' which Kjaersgaard says enable us to step away from the rational and linear processes to design (Kjaersgaard 2013).The findings from online survey, observations and interviews revealed the 'openness' and 'collectiveness 'to the design as highly appreciated and valued. Sharing ideas clearly empowered the design process, although reservations were visible amongst members. It can be noted that even though people enjoyed the charrette they still felt power relations as one of the key barriers for effective engagements and a diminishing factor. Comparing the two groups in this instance; initial discussions and planning of Team NB enabled to resolve their conflicting issues, while Team KK tried to find the commonness to their discussion so that everybody's ideas could be integrated.

Both teams enjoyed the shared ownership of the design outcome, and whether these were several individual components or a single object, all were able to relate and acknowledge the shared aspect. It contributed in creating new communities of practice involving heterogeneous actors now belonging to the 'community' of basket making. It generated networks between seemingly distanced participants like architects, engineers and 'powerful strangers' (Emilson and Hillgren 2014) from academia and curatorial practice who could contribute in terms of education, policy and practice of heritage and design disciplines. When comparing the different stages of the design process, the most conflicting design activity took place during the idea generation stage. If more discussions and confrontations can be managed and resolved during this stage, co creation activity should become more effective. Reflecting on the overall charrette experience, early stage team agreements are crucial for effective design processes; otherwise we see a knock-on effect on the disintegration of team, and a lack of contribution from one or a number of members.

Charrette's outcomes with regard to heritage production

In light of the findings and contributing to heritage discourse, our observations further confirm 'Heritage' as a constructionist concept (Smith 2006, Smith and Akagawa 2008), so 'not as much as a 'thing', but as a cultural and a social process' using past memories to negotiate new expressions and identities for the future.(Smith 2006, p2) Especially team KK constructed heritage as what it means to them in terms of values, narratives, beliefs, what materials mean and offer in that very context of production. Heritage was both consumed and produced within the charrette environment; Empathy was not only created between people but also between things and materials: It could be seen as a collective expression between the material and non-material cultures.

As 'like-minded people' are said to form new heritage and develop heritages (Kockel, 2007); the multidisciplinary teams confirmed how heterogeneous actors, who may not necessarily come from that immediate tradition, can effectively contribute to the construction of new heritage. The charrette suggested new approaches for an inclusive industry especially at the craft- design interface, where dissonant and contested ideas were managed effectively through co-creational activities. This is especially useful in craft and design debates, where the challenges of globalisation, global influences and the acknowledgement and acceptance of local and traditional ways of knowing are not yet resolved when design meets craft. (Tunstall 2013) These scenarios require more sustainable ways of engaging, scenarios that are more than participatory and go beyond the narrow interface of a user- producer or user-designer binary. (Blomberg and Karasti 2013) Also in design thinking, scholars encourage an expanded participation by including socio-material assemblies as 'things' within the design process rather than objects as 'things' (Bjögvinsson et al. 2012, Emilson and Hillgren 2014) Therefore the charrette was useful in terms of 'bringing out alternative opportunities', allowing a 'polyphony of voices', and 'mutually vigorous but tolerant disputes' amongst diverse members. (Emilson and Hillgren 2014, p69) This is further useful in the current design climate of creating 'newness-for-the-sake-of-newness' (Papanek 1985 and Fry 2015) and 'design's more is more mentality' (Hunt 2011, p34), and its implications for politically instituted, and much debated designer- artisan interventions. (UNESCO 2005)

The charrette offered insights into the workings of shared heritage (Denes 2012) and a grass-root, community based approach to heritage management (Santos and Müller 2012) which could be developed further by involving different stakeholders. Our experiment confirmed the importance of viewing both tangible (the material culture) and intangible heritage (practices, representation, expression, knowledge and skills) in a holistic manner (Kirshenblatt- Gimblett 2014)[5,6]. This is relevant for discussions around safeguarding of cultural heritage by involving producers, consumers, policy makers, educators and other contributors. Development of these kinds of participatory models needs future testing on live and realistic projects to fully evaluate its usefulness in grassroots community practices .

Limitations of the Study

A one day activity only affords participants a limited amount of time to explore the concepts and to get to know each other. The brief influenced the design process and level of engagement as it directed conversations and enforced a strict time frame. The materials provided (rush and willow) were challenging to a novice, and only a limited array of techniques was demonstrated to the group to suit a one day activity. Therefore the full potential of basket making was never to be fully realised. The charrette participants involved a number of design and heritage professionals from several different disciplines. When inviting participants, the researchers did not take into consideration the different participants' prior basket making experiences, knowledge, skills, and abilities, as it was seen as key to have a viable number of participants for quantitative and comparative observations. Any specific prior knowledge of basket making might have exerted an influence on the outcomes of the charrette, though none became apparent in any of the observational data.

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From participation to collaboration: open innovation as place making

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ABSTRACT

This paper reflects on strategies for staging encounters and engagements among diverse actors in processes of innovation that are open in the sense that the objective of the process, although formed within an overall program and project frame, grows out of the situated and concrete process work itself. By drawing on a current design research project, which deals with mobilising citizens around activities in a new library and cultural house under construction, the paper proposes collaboration rather than participation and place making rather than a few selected workshops and events as a strategy for handling the open-endedness and complexity of the innovation process.

Keywords
open innovation, collaboration, place making

INTRODUCTION

Open innovation projects are often described as consisting of first a period of research, then some idea generating exercises in the form of scripted events with some scenario building, and then eventually a move into prototyping or full scale experiments. Although such cycles usually jump back and forth in a complex series of iterations, this is a reasonably popular formula, which starts in the open and ends in one or more design proposals. In this process, the well designed and tightly scripted participatory workshop, is often reported to be a key site for synthesis. Without question, the work of designing tools, materials and scripted events is fundamental to much innovation work. However, most designers engaged in open innovation projects will recognize that there is more to innovation than tools and scripted workshops. Some researchers and project managers are lucky enough to work from programs that are explicitly interested in how open innovation can be staged. But most innovation projects are probably carried out under less ideal circumstances, tied up to larger and more complex programs and visions, because this is also often where opportunities for funding in research and innovation are located. Innovation projects that designers engage in are often embedded in, and depend on, bigger schemes and visions, which are not necessarily open ended. Rather, such bigger schemes may be quite ordered and planned, for example by architects, policy makers and politicians. Sometimes, the intended openness induced in the careful design of co-design materials and a series of scripted events become almost impossible to sustain as research insights and design proposals travel to other planning processes and formats of representation beyond the control of the designer. In some ways this is a trivial observation. However, in this paper I reflect on these to some extent self-evident conditions for doing open innovation and participatory design. In the following I recount particular aspects of an on-going innovation project, and I propose collaboration rather than participation, and place making rather than a few selected workshops, to balance the local now with the planned and well rendered future. I begin by sketching out nuances of difference between participation and collaboration. I then go on to reflect on a current research project, and describe how the plans and decisions in which this project is embedded, come to dominate how open innovation can be approached. In the project this leads to a shift in focus; from the work of staging scripted dialogues related to a planned opening of a new library, to a concern for reimagining a local now, through open rehearsals revolving around making and sharing in a public library.

From Participation to Collaboration

The difference between participation and collaboration is not at all very clear, at least not in literature of PD research. Most researchers, myself included, use these terms quite freely and interchangeably to describe processes of innovation that emphasise the involvement of non-designers in the design process. Yet, reflecting on the push within the tradition of PD and co-design, which has been described as a movement of “democracy at work” to projects of “democratizing innovation” (Björgvinsson, Ehn & Hilgren 2010), it seems the collaborative engagement, rather than the participatory commitment, is a more precise way to describe contemporary processes of open innovation. As PD projects have moved away from the more or less confined setting of the workplace or organisation, where at least to some degree the design team is working with a coherent group of participants and from a well-established program, innovation has been opened up, so to speak. Generally speaking, the pursuit of more open agendas in open social arenas, which often include designing the very conditions for participation, has intensified the collaborative element as a two-way movement or two-way recruitment. There is a shift, as Binder et al. suggests (Binder, Brandt, Ehn & Halse 2015,) from participatory design to collaborative design because the very “making” in design and innovation is both a negotiation of how the design experiment may unfold, of who can participate, and of what can be designed. Under these conditions participation is rarely already established and uncontroversial, but rather often one of the outcomes of innovation. Jens Pedersen in an article titled “War and peace in Co-design” (Pedersen 2015) emphasises exactly this point, as he problematizes how participation in PD projects is sometimes staged as a given that always works in the interest of those participating. He recounts and analyses a PD project concerned with the design of technologies in a more traditional setting of the workplace, and points to the resistance to participation that the design team experienced. Most of this resistance, Pedersen contends, is not really ideological but practical. Most participants seem to be sympathetic to the principles of co-design and participatory design; the principle that those affected by design solutions should participate in the design decisions (Kensing & Greenbaum 2012), but in practise, mobilising people to participate in innovation projects is hard work. The very banal reason is that most people are already quite preoccupied and busy with many other mundane concerns and practicalities than with the participatory visions of the designer’s project. Therefore, we must scrutinise how project activities are negotiated, designed and agreed upon with stakeholders and collaborators outside of academia. Because this is where the real wars of co-design are typically fought, in the shadows (Pedersen 2015, p. 222) Pedersen suggests, in the process of “design before design”.

Building on these mediations, in this paper I suggest that participation may be understood as the more well prepared and scripted engagement. An engagement where participants usually commit, with various degrees of resistance, to become part of a research project. Whereas collaboration implies more of a mutual engagement and reciprocal curiosity that caters for multiple concerns. Collaborative engagements entail an ongoing negotiation of what partners are collaborating about, as well as of how collaboration can take place.

From the Lab as a Series of Events to Place Making

Open experimental innovation processes are sometimes conceptualised as laboratories or labs. The concept of the lab is usually employed as epistemic marker, modelled on the labs of natural scientists, to invoke rigor, transparency and scalability in the innovation process (Olander 2014). Some lab initiatives focus on the development of technologies and products. Here participants are performed as users, that can relatively easy be involved in the design process, with the purpose of eliciting future needs and inform the product centric innovation process. Other initiatives, like for example the Malmö Living Labs (Ehn, Nilsson & Topgaard 2015), focus on establishing long term relationships where collaborators can become active co-creators through quick prototyping in real life contexts. This work is centred around establishing social-material working relations rather than the design of discrete products or technologies. Such living labs are particular spaces for innovation that are usually assigned a specific location in a company or in a city.

A more conceptual attempt to capture the complexity of open innovation is the design lab (Binder 2007) or the co-design lab (Binder et al. 2011). Here the lab does not belong to a specific site or geographic location, but rather refers to a research program and a tool box across a portfolio of projects. The backbone of this lab is the staging of a series of related co-design events (Brandt & Agger Eriksen 2010). In such events participants or collaborators are brought in as co-designers to explore concrete future possibilities, through tools or formats like scenario building exersices These events take off in every day practises and moves on to scenario building activities through tightly scripted workshop events. They usually end up in prototyping activities or full scale rehearsals of future possibilities. An important characteristic of the co-design lab is the way in which participants take part in a series of workhops. Between workshops particpants go back into their everyday life and routines, and get the opportunity to reflect on findings and proposals.These reflections are then brought back in to the innovation loop in following workshops. In many ways, the co-design lab is a conceptually strong way to understand open innovation, as the metaphor is both flexible and systematic. Yet, the model of the lab does presume a more or less coherent research collective that can be sustained throughout the research project. However, this is far from always the case.

Given this background, in this paper I address some of the challenges of open innovation through the suggested work of place making. Place making in this sense, refers to the quite practical work of building relations to a particular site; to turn a space and location, in this case an empty room below a public library, into a place that hosts and organises a series of open innovation activities. In the project that I discuss, this work of establishing and prototyping a place becomes also a principal organising factor of the innovation process itself. Something else, I suggest, than a preconfigured innovation lab, like for example the Malmö Living labs, but also different from, for example the co-design lab, which rests on a series of scripted events and the formation of a more or less coherent research collective.

Some Background

The project that I recount in the following is set within the context of the Scandinavian public sector, and is part of a larger modern planning scheme to develop a suburban neighbourhood on the outskirts of a capital city. As such this paper addresses questions of open innovation from a very particular setting, not necessarily similar to how projects are planned and framed in other parts of the world. However, trying to move open innovation forward through situated engagements from within bigger structures and large scale plans is not exclusive to a Scandinavian context. Because although some initiatives may take off from more independent and non-systemic platforms, many of the challenges I will consider in the following are also relevant, I contend, for projects working with external collaborators from the private or commercial sector.

In the case I describe here, the project was set up as part of a long-term collaboration between the municipality and a design school in a kind of “research based platform collaboration”. This platform collaboration, over the years, has resulted in several different research and student projects, often in combination, all of which have engaged with questions and issues related to municipal public libraries. In the following I describe some aspects of such a combined research-student initiative, related the opening of a new integrated library and cultural house in a multi-ethnic suburban neighbourhood. This neighbourhood consists exclusively of affordable public housing with around 6000 residents, and is often exposed as a deprived and problematic neighbourhood on national media.

The current library of the neighbourhood is a small classic library; the smallest in the municipality. Despite cutbacks in public spending, and a low numbers of visitors that take home books, this institution has been able to sustain itself. Perhaps because the library has taken on a role as “social library”, emphasizing the personal encounter and a close collaboration with the community. In the near future the library will be relocated into the new high profile institution, which will contain an open café, a concert hall, workshop facilities and an open maker space, along with modern library facilities for children, youth, and adults. The new institution is part of a bigger developmental plan to lift the area over the next 15 years. The plans and the architectural design of the new building also support future visions and strategies for municipal libraries in the city as a whole. These strategies promote a shift in focus, from the library archive and material collection, to a concern with providing more effective digital services to the citizens. In parallel these plans envision the public library as an open hub for cultural activities, and as such they reinforce a current tendency across the library sector that works to transform the public library into a cultural house.

A Change of Plans

In this project we were commissioned to involve residents of the neighbourhood in an open innovation process around cultural activities and events, related to the future visions that had been laid out in plans and strategies of the soon to open new building. At the time when we became involved in the project, in the spring of 2015, the plans for the new building had been well underway for more than ten years. Thus, with our engagement we were tapping into a long history of aspirations, hopes and disappointments, but also many current and future stakes related to the new building. In the original plan we set out to do some field work, some explorative workshops with staff and citizens, and then in the end some prototyping of cultural and social activities in the new building, which at the beginning of the project was expected to open in the fall of 2015. However, as a result of unforeseen problems at the construction site, this plan was soon postponed to the end of year. A few months further along, these plans were changed again. This time with an expectation of opening the new house in the spring and early summer of 2016. But as spring arrived plans were changed once again. The opening of the new building was now postponed to the end of the year, a few months before the research project is to be finalised and funds run out.

With all this unforeseen changes we were constantly having to rethink and change our engagement on a local level. It was not only that the new library didn’t open to the public during the project period, which meant that our plans for prototyping new activities and practises in the new house and organisation could not be carried out as planned, but the consequence of the delay also kept many decisions in the dark. For example, decisions about the design of facilities inside of the new building, and decisions about the role of the staff in the future institution. Further, because the project of the new library had already been underway for more than ten years, with many unexpected and unfortunate turns in the process, we soon experienced quite an explicit scepticism among citizens and library staff towards the overall project. We may say that we experienced resistance to participation, and this resistance, as it turned out, was not only related to practicalities like lack of time. It was also related to previous disappointments with professional project makers and the whole process that had led up to the design of the future library and cultural house.

I don’t think the situation recounted here is unique. On the contrary, it is probably quite trivial that researchers enter into projects, with the ambition of staging local possibilities through open innovation, and then find that the conditions for moving the project forward are not quite as open as promised. Even if the changing plans are in some sense external to the very local encounters and engagements that usually propel open innovation, they may still have a profound effect on how questions and challenges can be approached. The challenges recounted here slowly required of us to be less ambitious in relation to future visions of the library, and more concerned with collaborations that could restage or reimagine existing practises. Because with the constant change of plans we found it increasingly problematic to invite people to discuss future possibilities related to the new building, for example through scripted events of scenario building, since we couldn’t really say much about how and when the collaborative work would be taken further. We couldn’t really establish real creditability simply by inviting residents to participate, once again, in the well rendered future visions of decision makers, architects and planners. Therefore, we had to come up with some kind of approach that could keep the investigation open, and at the same time take us some place new.

Finding Alternative Intervention Points

The unpredictable and uneven progression of the overall planning process frustrated our initial strategies in several ways. In this paper however, I will focus on how we worked with visions of maker spaces in the future library, through open explorations of making and sharing that centred around full scale rehearsals in a somewhat empty room below the existing library.

During the first period of the project, we had learned that workshop facilities for knitting, sewing, needlework and different kinds of arts and crafts was something that many residents in the neighbourhood longed for. As it turned out, the neighbourhood already had quite a rich culture of making and several maker communities, for example at the local church, at the senior club, and at an open drop-in centre for mentally ill. Many of these communities were already well-established, but they were mostly centred around the social and cultural life of particular groups, for example, seniors, fathers, or Muslim women, and there seemed to be very little exchange among them. At the same time, in recent years, maker spaces and maker cultures have entered public libraries. However, such spaces, at least in a Scandinavian setting, often promote very particular ideas of making, as they are primarily focused on making available new technology to library users. Maker spaces in public libraries are often focused on supporting the individual project of the creative and entrepreneurial user. Mostly they are conditioned on the relatively high level of technical skills, and usually they require membership, or at least that users sign up in advance. As researchers at a design school this triggered our curiosity. We became inquisitive of the relation between design and making, because design is often considered an expert activity, while making is usually looked upon as a mundane activity that is open and accessible to anyone, at least in principle. Taken together, these different perspectives provided us with both relevance and motivation for a further exploration around making and maker activities in the neighbourhood. In the architectural plan for the new building particular workshop areas had already been assigned for different but not yet specified maker activities. As the program for the future building would transform the current traditional library to become a modern cultural house, various kinds of cultural activities revolving around making were already expected to play a prominent role in that future. But because of our previous experiences with uncertain progression of the overall project, we wanted to pursue a program of exploration, where different kinds of engagements, not necessarily related to the question of the new library and cultural centre in direct terms, could inform the process of innovation.

Setting up Camp

At this point of the process we didn't have an open innovation lab dedicated to the exploration of future plans, nor did our efforts to organise the innovation process around a series of scripted activities seem to work. We were looking to enter into a mode of genuine collaboration with residents and staff, instead of inviting them to participate in a project only related to the future of the new building, which we, on behalf of the municipality, had been hired to carry out.

At some point we saw the potential in staging an open innovation studio in an approximately 100 m^2 room below the existing library. The room is in street level, with a big window section facing the only shopping street of the area. Inside the room is an open staircase leading up to the book shelves and service desks of the library on the first floor. The room, at this point, was far from anyone's idea of a well-equipped design studio or living lab. It appeared naked with just a few IKEA furniture, and during a regular week, the facilities of the room were only used by a local girl's club and a homework café for local kids. Nonetheless, the room, because of its central location and because it is an integrated part of the existing library, seemed like an interesting space for exploring a possible relation between making, libraries, and everyday life in the neighbourhood. We wanted to investigate a public studio format of sorts; an open frame for low cost, non-expert fixing and making.

To investigate this further, we invited two master students, who were then working on their thesis projects, and who were interested in maker activities around recycling and upscaling, to basically set up camp in the space below the library. We asked the students to act as hosts of the space, and to make the space central to their thesis work, in close collaboration with library staff, residents and researchers. To begin with we set up a few rules, to challenge what we had found to be popular configurations of maker spaces and fab labs in public libraries, namely, the preoccupation with new technologies, the favouring of individual projects, and the focus on the improvement of personal skills. We wanted to explore alternative approaches to making, and to prototype maker activities that did not require residents to sign up in advance; activities that would be attractive across generations, ethnicities, and genders and were based on low-cost materials and sharing.

Place Making - A Combination of Open Rehearsals and Scripted Events

One of the first experiments in the space below the library grew out of a need to upscale the still quite impersonal room. We needed to replace the municipal aesthetics promoted by the fluorescent lamps in the ceiling with some improved and more cosy light design. For this purpose, a workshop was designed, where residents were invited, either to bring their own worn out lamps for a redesign, or to make new lampshades based on simple geometric structures made of steel pins. At the day of the first workshop only one person showed up. This was obviously less than what we had hoped for, but the workshop was carried out as planned. On this occasion just one lamp was produced. Afterwards the lamp was used for decorating the still quite empty room. We realized, that we had to work by a slow and repetitive pace in the beginning. However, slowly, a few small events of making lamps turned into ad hoc-step by step approaches, which started to engage local residents in various maker activities. From fixing a kids scooter to wiring a plug, different kinds of activities started to mobilise a mixed crowd of residents around the space below the library. In order to support a faster and more repetitive pulse, a following series of open repair cafes was set up. For these weekly fixer events, residents were encouraged to bring their own stuff for repairing. In the beginning this was still an uphill experience, with only a few people turning up, and also a bit of confusion, as to the overall purpose, and how the repair activities could support local sharing. Because at first people arrived with a problem that needed to be fixed, for example a jacket or a pair of shoes, and then they expected the master students, in their capacity as designers, to fix their problem for them. It was only later, after a longer series of open cafes and repair events that residents, on their own accord, started to help each other with fixing stuff and making things. This shift, from expecting a service of repair, to a collaborative mode of making, fixing and sharing among local residents, was established only through a sustained open engagement, with constantly shifting groups of residents and professionals. Part of this work was supported by more traditional workshop formats and scripted events, but the main frame that held the conditions for open innovation together, was the on-going collaborative work of turning the room below the library into a place for local making and sharing.

From Particular Encounters Around Making to Prototypical Practises of Future Possibilities

From a struggle with moving innovation forward, and an initial interest in the relation between design, making, and libraries, the room below the library slowly became a central platform for collaborative in situ rehearsals of making in the neighbourhood. The work of turning the quite impersonal and not so inviting empty space into a lively and open place full of tools, local projects, and maker activities, does not follow common descriptions of how progress is usual made in innovation projects. The direct engagement with an open agenda centred around the making and hosting of a particular place, only became successful through a sustained and open rehearsal, and a good portion of patience. The key approach here is to keep both the various small projects of fixing and making, as well as the actual physical space open for whatever kinds of engagements that comes along, like when people out of curiosity drops by to take a look at what is going on in the room below the library. This may sound straight ahead and easy, but it requires much more, as we soon learned, than to set up a few sewing machines, a lap top, and open the door. A lot of time, especially during the first few months, was spend on field trips and visits around the neighbourhood to explore already existing communities of making in the area. As our idea started to gain traction among residents the room became occupied with materials, tools and up-scaled and redesigned items, which were then exhibited in the big window sections facing the street. On a local level, we may say that the collaborative and direct engagement below the library constituted the backbone of the innovation process. Yet, to become valuable beyond the local encounters, at some point, the in situ experiments around making also have to be lifted out of the very particular and specific, and into the modern planning scheme of the overall innovation project that the future of the library is embedded in. Just like much work is put into building legitimacy from an overall design vision and innovation plan, to a setting of local concerns and interests, so must local efforts find a way to feed back into the bigger picture of innovation that they are already part of. In this project we had been working from a model of making around informal encounters in the library, to comment on the way maker spaces in the context of public libraries are typically staged today. We wanted to challenge the material configuration and innovative practises of popular maker spaces, because through their composition they often come to promote particular images of citizens that favour the entrepreneurial, self-sufficient, and to some extent omni-competent citizen. We wanted to make space for alternative images of citizens in the library, and to stage the library as a public meeting place rather than a more traditional enlightenment project of the past. Part of this work is about the careful documentation of events and encounters through images, stories, interviews and small films that we made along the way. Just like the actual activities of making, the formats for capturing images and stories were developed along the way, but generally the materials were processed and designed in a quick manner, to enable a rapid redistribution among collaborators. During our engagement we posted small films, pictures and stories on Facebook and Instagram, but we also made use of more official channels, like for example newsletters and the intranet of the municipality. In the process we also invited managers, librarians, and cultural workers from other institutions to debate and discuss "our" collaborated version of making. On these occasions films, stories, and statements of the many and diverse encounters in the project were brought into debates around making, as exemplary images of what could be.

Conclusion

As we had learned the hard way, open innovation is an intriguing concept, but it is often hard to carry out in practise. And although designers work by tools and techniques and although progress depends also on inventive formats and scripted events, innovation is often the very practical work of trying to balance the tensions between the situated now and a well rendered vision of the future. When local innovation is only a small part of bigger plans and measures, those bigger plans sometimes come to dominate and derail local efforts to move collaboration and innovation in new and productive directions. In such cases it may be productive to replace a perhaps too concerned interest for the future, with an exploration of possibilities in the present. Instead of working with innovation in cycles that progresses from research, over idea generating events, to prototyping and proposal making, explorations may start with rehearsing prototypical practises that are only slightly agitated versions of what is already going on. However, this way of reimagining what could be otherwise, from the present, requires a willingness, on the part of the researcher, to remain in the open, and in a sense, to give up on innovation and progress, at least momentarily. Confusing as this may be, relating activities and explorations to a particular place may help to create a sense of belonging and purpose for innovation. In the project recounted here, the otherwise empty space below the library, through a step-by- step tactic over 5 months, was turned into an informal place for making and sharing in the library. A place that formed an open platform for full scale experiments. In some sense several of these experiments were scripted according to the program for making that we set out from. They were configured against our proposed protocol for a maker space, which focused on maker activities that are open to everyone and uses materials at hand. Evidently, any innovation project runs the risk of colonizing participants into visions in which they cannot recognize themselves. Simply because the future is too remote, too esoteric or too controversial. However, establishing a particular place as a frame for organising innovation, may offer a different kind of shared agency and ownership from the present, a platform for genuine collaboration, where different things can be tried out because they are valuable and meaningful in the present, before we even know how they are connected to bigger schemes and future vision.

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Fostering engagement through creative collaboration

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ABSTRACT

Design innovation aims to tackle complex societal challenges through new design practices and bespoke methods of engagement (McAra-McWilliam, 2012). Creative collaboration is a core aspect of design innovation practice, involving diverse stakeholders including academic, business and civic partners, and importantly end users within the design process. Innovation in the health and care context requires collaboration between a variety of actors when designing transformative product and service solutions (Bradwell and Marr, 2008). Consequently, the focus of design has shifted from the artefact or outcome, to the design of an open and participative process that relies on the direct contextual insight of participants, their creativity and lived experience, and is inclusive of a multiplicity of perspectives.

Experience Labs open up the design innovation process to multiple stakeholders by employing a participatory design approach. The Labs provide a space for collaboration and co-creation among a range of stakeholders and end users (French, Teal and Raman 2016). Active participation within Experience Labs requires participants to engage both with the concepts being explored, and with each other's points of view.

We discuss our approach to designing spaces for collaboration which foster engagement and participation in the creative process, among multiple stakeholders. Through examples, we discuss the tools, artefacts and activities that support participants to meaningfully engage with ideas, and strategies for curating groups and managing collaboration. We share design learning regarding engagement and the resulting impact on people, processes and outcomes, and consider how this approach may be applied in other contexts to foster engagement.

Keywords

engagement, collaboration, creativity

INTRODUCTION

The practice of design innovation aims to tackle complex societal challenges through new design practices and bespoke methods of engagement (McAra-McWilliam, 2012). Creative collaboration is a core aspect of design innovation practice, involving a wide range of stakeholders and academic, business and civic partners, and importantly end users within the design process. Innovation within the health and care context requires the collaboration of a diverse range of actors when designing transformative product and service solutions (Bradwell and Marr, 2008). As a result, the focus of design has shifted from the artefact or end result, to the design of an open and participative process that relies on the direct contextual insight of participants, their creativity and lived experience, and is inclusive of a multiplicity of perspectives.

Participatory design approaches seek to open up the innovation process to include multiple stakeholders and end users in the design of new products and services (Sanders and Stappers, 2008). When designing within the context of health and care, there is a need to employ methods that actively engage people in both collaboration with designers and other participants from similar or different backgrounds, and also in creativity to engage imaginations. Participatory design is foregrounded on the belief that people have a democratic right to be included in the design process of things that will affect their lives, and be empowered by participation (Bowen, 2009). What began as a movement toward democratisation of work places in Scandinavia in relation to the introduction of new technology (Bjögvinsson et al., 2012) can be seen in the active citizenship agenda currently advocated in the UK, and the concept of participation is now widespread in the public sector (Luck, 2007).

Experience Labs open up the design innovation process to multiple stakeholders by employing a participatory design approach. The Labs provide a space for collaboration and co-creation among a range of stakeholders and end users (French, et al., 2016). Active participation within Experience Labs requires participants to engage both with the concepts being explored, and with each other's points of view. We also aim to engage participants to collaboratively explore ideas and in creative exploration of new ways of working towards 'preferable futures' (Dunne and Raby, 2013; McAra-McWilliam, 2014). In doing so, we aim to generate energy, creativity and empowerment, mobilising individuals and communities towards a shared purpose (Hancock and Bezold, 1994), and ultimately, towards developing sustainable solutions.

In this paper, we discuss our approach to creating spaces for

collaboration which foster engagement and participation in the creative process, where multiple stakeholders are involved. Through practical examples, we discuss the values, tools and artefacts, and activities that support our participants to meaningfully engage with ideas, and present strategies for curating groups and managing collaboration. The paper will discuss ways in which the Experience Labs foster engagement, sustain participation, and support creative collaboration throughout the design process and among the participant group. We will share our design learning regarding engagement and the resulting impact on people, processes and outcomes, and consider ways in which this approach may be applied in other contexts to foster engagement.

Creating a Space for Collaboration

The traditional space of collaboration is one dominated by formal structure, built around scheduled meetings and processes aligned to practices inherent in business. As working practices have expanded, becoming more open in nature, the understanding of collaborative space has also evolved to meet the needs of those participating. Central to this shift is a demand for a more social, inclusive and engaged environment within which to collaborate. This notion of an open, flexible and accessible space for collaboration fits well within the recognised value of design within a collaborative context. Engagement in collective creativity, design-led activity shared by two or more people, is acknowledged to encourage a collaborative approach and to facilitate interdisciplinary working (Sanders and Stappers, 2008; Sanders and Westerlund, 2011) and can be described as a participative process where people and organisations together generate and develop meaning (Ind and Coates, 2013).

The role of collaboration in the creation of solutions that extend beyond the perceived outcome can be linked to the ability to harness the adaptive capability of those engaged (Folke et al., 2003). Adaptive capacity has a focus on the creation of opportunities for learning and the ability of participants 'to experiment, adapt and foster resilient strategies to deal with complex socio-economical circumstances' (Armitage et al., 2010). It is acknowledged that these complex challenges do not come with 'existing best practices or known expertise' with which to solve the issue (Heifetz et al., 2008), rather they present a unique space for interaction, influenced by the experience and capacity of those engaged to respond to that challenge in the moment.

The importance of identifying and creating the optimum conditions for participants is therefore a necessary element in enabling a space for collaboration. Any multidisciplinary collaboration involves the careful consideration and sharing of individual stakeholder's experience, perspective, knowledge and identity. Each participant brings to the collaboration space their own set of personal and professional values, both implicit and explicit, and how these are articulated and then interpreted within a group of participants can have an impact on the level of engagement and collaboration. One of the key challenges in multidisciplinary collaboration is in the creation of an open and reciprocal space within which participants can share (Hepburn, 2016). This sense of a safe space, one that enables both the individual voice to be heard while working towards a shared understanding is critical.

More specific to participatory design activities, this safe space and the creation of meaningful relationships requires participants to feel comfortable and able to collaborate and communicate with each other (Loi, 2004). In this context, collaboration moves beyond the business innovation model towards one that is more responsive to the needs of the participants. The involvement of multiple stakeholders creates a sense of collective ownership of the process and the output of the collaboration, generating value in both the way of working and in the solution that emerges. Hornecker et al. (2006) consider the use of participatory design as a way of working within an 'opportunity space', enabling the collaboration to capture and collate the perspectives of multiple participants or users in order to maximise a solution.

Within this creative collaboration space, problems can be reframed based on the lived experiences of participants, raising and answering questions that without the user perspective might previously have been assumed. This alignment with personal experience works to make the problem being explored more relevant to participants and further supports engagement, allowing participants to feel able to make a contribution. This also works towards creating a common language and shared understanding between participants and fosters engagement towards a common goal by enhancing communication, bridging boundaries and building relationships (Thomas and McDonagh, 2013).

Within the Experience Labs, there are a number of important values involved in crafting the space for collaboration. In the following sections we present each value, explain the way in which it fosters engagement and supports collaboration, and provide evidence from completed Experience Labs.

Equality

Careful consideration is given to the physical space chosen for each Experience Lab, in order to create conditions conducive to collaboration and to promote equity among participants. Neutral spaces are often used when working with a mix of participants, so that the space is new to everyone with the aim of reducing any existing power dynamics. Spaces are used that foster a relaxed and informal atmosphere, offer inspiration (e.g. beautiful buildings or scenic settings), and can also involve using real or realistic spaces within which to simulate and test a proposed service or experience.

While a key advantage of collaborative activity is the differing perspectives brought in by each participant, it is acknowledged that with each perspective comes a set of values, both personal and professional. Collaboration must be carefully curated to ensure that each participant understands and respects the variety of views offered as well as valuing the competencies and unique expertise and experience of each participant. Carrier and Kendall (1995) describe interdisciplinary collaboration as the 'willingness to share and indeed give up exclusive claims on specialist knowledge and authority' and the understanding that by disclosing personal experience, participants are not giving away part of themselves but rather are contributing to wider group value.

'Participatory design has the moral and pragmatic tenet of including those who will be most affected by a design into the design process' (Segalowitz and Brereton, 2009). However good participation is hard to achieve (ibid) and creating true partnerships may be challenging, particularly in an inclusive design process. As Experience Labs involve a diverse range of participants, additional considerations towards inclusivity are required to ensure participants are supported to make an equal contribution and that the design process is open and inclusive to all. Using asset-based approaches (Foot and Hopkins, 2010; McLean, 2011; Teal and French, 2016), designers can use their skills to empower participant's individual capabilities (Cipolla and Bartholo, 2014), supporting them to engage in the creative process.

Example no.1: Designing for inclusivity and equal partnerships

One project involved working with young people with learning disabilities, and in contrast to traditional design processes where participants may be limited to a consultative model of participation, the Labs were designed for collaborative participation. Even when there is intent of participatory design with people who have mixed levels of abilities, in practice it is often difficult to achieve. This group is often vulnerable to exclusion from participation within technology design projects, or be vulnerable to tokenism when they are provided with the opportunity to participate (Benton and Johnson, 2013). During planning, one of the first priorities was to understand from the project partners how participation from the young people could be supported, encouraged and enabled. Activities and tools were designed to be completed by the young people themselves, rather than facilitated by someone else on their behalf. Careful consideration was given to developing tools, keeping language simple, using minimal text and use of visuals and objects to communicate ideas. For one of the activities, a 'Superhero kit' with superhero badges, costumes, and design tools were created to help participants to overcome their fears and challenges and to imagine new possibilities. This helped to engage the participants as the tools were designed based on their interest in gaming and comics, and using the theme of superheroes with 'additional powers' helped to think beyond some of their everyday challenges. Use of costumes and role-play also provided them a new vocabulary to communicate their ideas.

Many Experience Lab projects depend on the participation of both service providers and service users and when structuring the Labs, existing power relationships require careful consideration when curating groups to ensure that participants feel able to engage and contribute. In order to create a safe and open environment where participants feel comfortable being critical and sharing their views, it may be necessary to design a series of separate Labs to build understanding of these different perspectives of the service, before moving forward to collective ideation. Through these earlier sessions design researchers can build trust and identify any potential barriers to inequality, and design collaborative activities to overcome them.

Example no 2: Experiences of living with a progressive illness

When exploring a new concept to support easier access to statutory services for people living with a complex progressive illness, it was important to understand the current challenges of accessing services and opportunities for innovation from the perspective of both people living with the condition and service providers. In order to ensure participants felt comfortable in sharing their frustrations, it was deemed important for these sessions to be held separately. While there may undoubtedly have been value in the participant groups understanding each other's perspectives for the purposes of participatory design, the challenge of ensuring equality within participant groups would have been complicated by the imbalance of power within the service users and providers. As a result design activities were explored initially with service users and communicated to service providers using prototypes. These ideas were then tested by service providers to understand their perspectives, building a set of requirements that reflected the needs of both groups.

Building Trust and Relationships

Researchers engage in a significant amount of preparatory work prior to an Experience Lab in order to gain a contextual understanding of participants and project context to create the space, and design the methods and tools for engagement within a Lab. Contextual understanding of participants often employs the use of design ethnography in the form of observations, interviews and visits. The insights gained are used to design scenarios, critical artefacts (Bowen, 2009) and experiences that are personally meaningful to participants, building the foundations through which to develop a trusting relationship. Understanding the project context can involve horizon scanning in the form of literature review integrating both academic literature, policy documents or existing publicly available project reports. Interviews with subject experts such as clinicians may also be conducted to gain a rich understanding of the existing research landscape.

Example no.3: Designing with contextual understanding

When designing an Experience Lab to explore and test a concept to allow older adults to live independently at home, home visits were made to all participants to gain a sense of the routines and everyday life of each older adults and gain an understanding of what is important to them in managing everyday life. The insights gained from the home visits were used in subsequent Labs to design personalised guided shopping visits and bespoke experience prototypes, permitting the concept being developed to feel more realistic by relating it to details from their everyday life. Discussion around the proposed technology was made accessible because it was built upon their own experience through the contextual work. The home visits supported a sustained engagement over three Experience Labs allowing participants to build trust and rapport with the researchers over the course of the project, leading to critical and creative engagement with the concept being developed (French and Teal, 2015).

Pre-Lab work can also involve organising smaller Lab sessions with project partners and relevant stakeholders (health professionals, academics or other civic partners who currently work with prospective participants) in order to gain a contextual understanding based on their expertise of the project context. In these sessions, partners and stakeholders can provide direction and guidance when designing Labs to ensure they will meet the needs of participants, and can offer expertise and advice in relation to the design of Lab materials such as participant information and supporting materials for Lab activities. The knowledge and experience of key stakeholders who work directly with prospective participants is key to establishing trust through their recommendations on what is appropriate for participants. Through this preparatory work, we can ensure materials are not intimidating, using appropriate language and familiar concepts.

Example no.4: Designing sensibilities with contextual sensitivity

When working with young people with learning disabilities, the researchers arranged a number of Pre-Lab sessions with both the project partners and care workers who worked with the potential participants. This was important for understanding and sharing the necessary skills involved in engaging with and supporting potential participants during the design process in a respectful and non-patronising manner. The materials that were designed for information and consent were reviewed in these sessions to ensure they were comprehensible and playful, but not child-like. We also arranged to meet with the prospective participants at one of their relaxed social meetings to explain the project and provide information to allow participants the opportunity to ask further information and have time to go away and consider their participation. Ensuring that these experiences were positive by paying attention to the needs and respecting their choice helped in establishing trust and fostering a constructive relationship with participants who consented to take part in the Labs.

Empathic Dialogue

Within a participatory design process, dialogue is needed for creativity to happen (Pinheiro and Fonseca, 2016). Dialogical approaches within the Experience Labs engage participants beyond being considered as 'users' but as active participants in the design process (Cipolla and Bartholo, 2014). Dialogic models of communication are used within the Labs to build and sustain relationships and allow multiple voices to be heard whilst also exploring any tensions (Escobar, 2011). When engaging participants in dialogue the key dynamics of the need for openness, respect, listening, storytelling, finding common ground and exploring differences, whilst balancing advocacy and inquiry, and building a safe space for collaboration, require consideration (ibid).

When the empathic dialogue is between a designer and an end user, the 'designer' does not relinquish his/her position to 'become the user', a position from which nothing new can be created, rather the designer responds to what they see as the user's world from their own perspective as designer" (Wright and McCarthy, 2008, p.639). Within Experience Labs we aim to use dialogical approaches to create meaningful engagement with participants and to promote empathy with and among those who participate, leading to insights and tangible design outcomes (French and Teal, in press).

Example no.5: Designing for dialogue using pop-up engagement

A recent project aimed to engage with the wider public to gain insight into their perceptions of digital health records, prior to a series of Experience Labs which explored how these might be used to better engage people in self management. In order to gain a broad picture of the opportunities and barriers, the team designed a pop-up engagement tool (Teal and French, 2016), which was used in public spaces. This approach used an intriguing prop and an open question to start a dialogue with passersby on the things that keep them well and the ways in which personal health records could be helpful. The conversations were captured by the design facilitators on cardboard 'apples' and hung on a large wooden tree. This approach enabled dialogue with a large number of people in a short space of time (Approximately 150 people in 8 hours), and informed the design of subsequent Labs.

Storytelling can be used as a way of articulating identity and self (Bruner, 2003) and of exploring experience and shaping our understanding of the world (Maxwell et al., 2014). This is aligned to Escobar's understanding of the reshaping of perspectives, enabling the continued re-articulation and re-interpretation of experience (2011). Adopted across disciplines, both consciously and unconsciously, storytelling has a significant role within creative collaboration. The collaborative practice of storytelling is most commonly explored through design methods such as persona development and storyboarding, however the space for collaborative conversation need not be so directed. Empathic dialogue in this context is enabled through the creation of conditions conducive to storytelling rather than through directed interaction. While a traditional focus group is facilitated, following predetermined line of questioning, collaborative storytelling encourages a more fluid approach, led by the stories and personal experiences of those participants engaged and with the space to allow conversations to emerge naturally.

Example no.6: Designing for dialogue through collaborative storytelling

As part of a project that aimed to design new ways of promoting breastfeeding, collaborative storytelling was used to gather insight from a number of perspectives. The group comprised midwives, health visitors, infant-feeding specialists, and a consultant, as well as academics with an interest in maternal care. The storytelling session began with an introduction to the project given by the Lab researcher, who then posed an open question, centred around experiences of breastfeeding promotion. Little facilitation was used, rather the session was led by the stories shared in a natural and emergent way. This peer to peer exchange created a sense of curiosity, with participants beginning to question each other as well as aligning themselves with particular perspectives shared. Storytelling in this way enabled a practice of open sharing, related to service delivery as well as eliciting responses to real and perceived challenges and opportunities.

Despite the removal of a structured framework of questioning, a core research concept is established prior and through collaborative conversation participants can engage with and respond to the concept in an emergent way that is relevant to their own experience. Furthermore by foregrounding experience, participants can build upon each other's stories, generating a richer and more authentic articulation of evidence relevant to the concept.

Engaging Imaginations and Creativity

One of the key challenges within the Labs is to engage the imagination of participants to move beyond the mundane to the creative to consider futures that are preferable rather than possible or probable (McAra-McWilliam, 2014; Dunne and Raby, 2013). The Lab activities are designed to support participants to move through the design process, supported with the use of bespoke tools and artefacts to engage and empower participants to contribute. Even though the participants' contributions are based on their individual lived experiences and motivations, while imagining preferable futures their contributions extend beyond ideas that impact that own lives to other stakeholders and people in similar situations, and creating something that is socially meaningful. This offers the engagement a purpose and meaning beyond their own lives.

Creative exploration is grounded within a generic design process that supports emergence and ambiguity whilst ensuring timely decisions are made. As such, designers offer a heightened sensitivity and specialised set of skills to tackle complex or 'wicked' problems (Buchanan, 1992) such as the challenges facing the health and care sector. At the early stages of an Experience Lab there are many unknowns, and the opportunity identified is likely to be difficult to articulate at the fuzzy front end (Sanders and Stappers, 2008) of the development process. Uncertainty can be overwhelming to non-designers, and faced with the task of taking ideas forward, it can be tempting to revert to inductive problem solving, and tried and tested approaches that offer little scope for real innovation (Bate, Robert and Bevan, 2004). As such, it is our task is to ensure non-designers feel safe outside their 'comfort zone', enabling creative conversations to happen. The challenge to balance at this stage is ensuring that the idea remains open enough for participants to shape it, but defined enough to be meaningful.

Bespoke Tools and Artefacts

Within the Lab, generative tools and artefacts are used to guide participants through the fuzzy front end of the creative process, fostering engagement and collaboration. The tools and artefacts serve a number of purposes, making ideas tangible and allowing participants to discuss and explore how a concept could be embodied and implemented (French, et al., 2016). The tools and artefacts not only engage people creatively, but also experientially, empathically and metaphorically. Lab activities are carefully crafted and sequenced to engage participants in both the creative development and critical evaluation of new concepts. Techniques such as design fiction (Blythe, 2014) and experience prototyping (Buchenau and Fulton Suri, 2000) are used to allow participants to experience and interact with an idea.

Example No.7: Designing tools to manage uncertainty

When developing a digital tool for managing personal data and accessing services, the metaphor of a backpack was used to enable the participants to understand and relate to the proposed concept. The backpack metaphor was explored using a paper based tool that allowed participants to build their own backpack with basic modular elements that could be selected, annotated and adapted. In this case, design researchers collaborated one-on-one with participants, to enable the concept of personalisation to be explored by allowing the participants to each build their own personal backpack. The modular tool enabled the participants to develop a concept they initially found difficult to comprehend, by considering each attribute in turn and discussing and illustrating their needs through the tool, building to a fully realised prototype of the system.

Activities are designed to gradually build confidence in proposing ideas or using creative materials, and participants are encouraged to write or draw their ideas on Lab materials. Materials are deliberately designed with an unfinished aesthetic to look rough and sketchy, inviting participants to contribute. Despite this, participants may be reluctant to make a mark, therefore design facilitators can support them to record and illustrate ideas if necessary. Tools and artefacts are designed to support collaborative engagement and are crafted in sizes that are big enough for groups of people to work together to encourage sharing of thoughts and making them public. They are often modular to allow multiple people to input into the process of making. By supporting a process of collaborative engagement, the tools also enhance dialogue and negotiation between different viewpoints. The end goal is not to create a beautiful artefact, but to create a meaningful artefact that aids sense making of multiple perspectives through an iterative creative process.

Often it is necessary for the designer to propose an idea in response to a challenge or opportunity raised by a participant. We find that participants respond by adapting the idea to better suit the context and need, or by suggesting an alternative, more appropriate idea. This initial exchange can 'get the ball rolling', opening up imaginations leading to many further ideas and insights. While this might lead some to discuss whether the design is being done by the participant or the designer (Sanders and Stappers, 2008), in practice this is a collaboration and innovative ideas are rarely the result of an individual.

Narrative approaches are often used to bring concepts to life by relating them to real life experiences. Personas and storyboards are frequently used to develop this perspective. While it might be intimidating to tackle the redesign of a service or product at a systems level, by reducing the task to redesigning the experience of one service/product user it can become a more manageable task. Participants may be asked to bring their experience to bear in designing a service user persona or scenarios based on people they know or have met, or we may draw upon insights gained from Pre-Lab activities. Participants may also be asked to describe the current service or scenarios where a new product or service would be useful, in order to begin the process or rethinking the scenario and generating new ideas. By employing narrative approaches, engagement can be enhanced through the sharing of lived experience and the integration of participant's stories in a meaningful and valued way.

Conclusion

In this paper we have discussed our Experience Lab approach to creating spaces for collaboration which foster engagement when innovating in the health and care context. Through our approach to gaining a contextual understanding of the project context and participants, we propose that engagement is made more meaningful for participants by designing bespoke Labs informed by their insights and lived experience. Contextual underpinnings allow participants to relate their own personal motivations and associations to create meaning that enables them to make valuable contributions in working towards the wider goal of the project. Preparing participants to be part of a design process requires a considered approach and we propose that this period of preparation happens at a much earlier stage to enable the depth of participation and supports the level of engagement.

Based upon our learning to date, Experience Labs allow for rich and meaningful interaction through a large, extended engagement however, there is also value in smaller, brief engagements with larger numbers of people. This requires as much attention to the design of the materials and the aesthetic of the experience regardless of the length of the engagement, or the number of people to be engaged. Consideration of core values including equality, trust and empathy is vital.

The design learning shared in this paper in relation to engaging participants in this approach, provides a number of implications for future research. We propose that the methods and tools for engagement and collaboration shared in this paper have the potential to enhance engagement in other contexts. In particular, the approach may be of value to public engagement in relation to a number of societal issues. Experience Labs value the voice of the people, and can provide a potential alternative framework for engaging effectively with the public as the Scottish Government hopes to do through 'Our Voice' (https://ourvoice.scot) by continuing to involve the public in planning and decision-making. In Scotland, civic participation is becoming increasingly expected as members of the public become more willing to engage in decisions regarding issues that are important to them (Marcinkiewicz et al., 2016). However, in deprived areas, engagement is reduced (ibid) and this is an area of potential focus when considering how this approach could enable and support those living in deprived areas to ensure their voice is heard. Future research will explore how the approach may be transferable or applied to contexts outside health and care.

Further to the learning shared in this paper, we have identified an ethical challenge relating to the continued engagement of participants following the completion of a Lab. One way of addressing this may be to develop an Experience Lab community that builds upon the connection established through participating in a Lab and engages participants over a longer period of time. In this way, participants could be kept informed of the progress of the projects and see the impact of their contribution. As such, future research will be directed to consider the ethics of engagement.

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Design as process, artistic interventions and civic-minded improvements as artifacts: applying an open model of community engagement in social contexts

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ABSTRACT

In recent years, we have seen a significant shift in the field of design, from design as an artifact to design as a process. This shift challenges the designer to think strategically about the entire process, examining the design artifact as a single component within a much larger, more complex system of parts. This paper introduces the designer as strategist and systems thinker in the context of social design projects, while the community takes on the role of participant and maker. Inspired by the do-it-yourself (DIY) and open-source mentality of residents, this central idea creates a workforce of critical makers, especially useful in local endeavors with limited budgets. By opening the design process to enable community engagement in all phases of work, citizens are empowered as they find ownership and authorship in the artifacts that they produce. However, inherent challenges face the designer, the most evident being the ability to relinquish control of aesthetics. Through four community revitalisation projects in Memphis, TN — Make Memphis campaign (2012), Knowledge Quest community garden (2013), Revival Chelsea floodwall (2014), and Crosswalk safety project (2015) — an open model and its application are examined. The design process, outlined in detail, includes the roles and responsibilities for all phases of work including research, strategy, concept development, artifact, and management for both the designer and community members. Conclusions expand on ways to implement this model in different types of communities, uncovering key insights for global contexts.

keywords

strategic design, community engagement, community revitalisation projects

INTRODUCTION

In recent years, we have seen a significant shift in the field of design, from design as an artifact to design as a process. This shift challenges the designer to think strategically about the entire process, examining design artifact as a single component within a much larger, more complex system of parts. Thus, the role of the designer can shift from a maker of artifacts to a systems thinker of processes. With a renewed focus on the design process, the strategic, systems-thinking designer must collaborate and consult with others — both stakeholders and specialised experts — to complete complex projects. This collaborative approach in strategic design is the foundation of successful social design projects.

This paper introduces the designer as strategist and systems thinker in the context of social design projects, while the community takes on the role of participant and maker. Although community engagement is widely implemented in development and revitalisation projects, it is less typical to introduce community members as makers. This central idea, inspired by the do-it-yourself (DIY) and open-source mentality of residents creates a workforce of critical makers, especially useful in local endeavors with limited budgets. By opening the design process to enable community engagement in all phases of work, citizens are empowered as they find ownership and authorship in the artifacts that they produce.

Motivated by post-industrialised cities that no longer thrive economically by a 20th century ideal, designers have an opportunity to be activist in their community and guide citizens in revitalisation projects as seen in four case studies reviewed and analyzed. For each, impetus, process, artifact, and outcomes are dissected. Through the examination of these local projects, findings reveal pertinent commonalities in the design process, areas of engagement, and roles and responsibilities for all phases of work for both the designer and community member. Conclusions expand on ways to implement this model in different types of communities, uncovering key insights for global contexts.

Designer as Strategist and Systems Thinker in Social Design

Strategic design, often referenced in disciplines of computing, engineering, sustainability, product, service, and systems design, can be described as design that “integrates a body of products, services and communication strategies that either an actor or networks of actors (be they companies, institutions or non-profit organisations) conceive and develop so as to obtain a set of specific strategic results (Meroni, 2008, p. 31). In the following cases, strategic design specifically references a whole systems approach by the designer to create an artifact in the community — an artistic intervention and civic-minded improvement — to make meaningful places. Blizzard and Klotz (2012) define a whole systems approach as:

An entire system as a whole from multiple perspectives to understand how its parts can work together as a system to create synergies and solve multiple design problems simultaneously. It is an interdisciplinary, collaborative, and iterative process (p. 458).

Thinking systemically in the design process supports sustainable solutions including the management of artifacts once they are implemented in society and the social implications that are inherent in community revitalisation projects. In successful social design practices, community engagement and a collaborative approach are core values of its identity. One could argue that social design already encompasses at least a partially open design process because good social design relies heavily on community engagement and feedback. Social design refers to “the practice of design for the public good, especially in disadvantaged communities” (Lasky, 2013, p. 6). It is an interdisciplinary problem-solving process with an emphasis on social consciousness that aims to find or solve complex social issues in the community. Further, the role of community engagement in social design is typically participatory, where citizens are consulted in research and strategy phases to ensure that development projects consider their best interests. Stakeholders are consulted, through interviews and focus groups, to help identify and define revitalisation opportunities and implement development in the community. This approach is widely adopted in practices identified as place-making that blend principles of architecture, design, and public policy to create meaningful places for citizens and avoid issues such as gentrification. However useful this approach, it is not entirely open.

Introducing Community Members as Makers

An entirely open design process expands the role of community members from participants to makers, while the designer is primarily tasked with whole systems thinking to facilitate and direct the process in all phases of work. This approach can also explore the designer’s role as an activist in one’s community, engaging and empowering others to make change. It enables residents to be critical makers in their communities, often offering solutions to complex social issues with limited budgets. By opening the design process, resident’s perspectives are accounted for and community members feel empowered as they find ownership and authorship in the outcomes of the project. To open the design process, or democratise the design process, community members can become critical makers in their community, creating resident-centric work.

A democratised and resident-centric system of community development projects does not necessarily replace the designer’s role of maker. “Rather than replacing professional design expertise and skill, our sense is that by encouraging and supporting design methodologies for non-traditional design ends—such as the socio-technical critique that is the main goal of critical making—open design helps bring about a kind of sociotechnical literacy that is necessary to reconnect materiality and morality” (Ratto, 2011, p. 208). Brought about by the DIY movement that originated from anti-capitalist values and the counterculture of the 60’s, open design can invite “experiential modes of alternative schooling” (Ratto and Boler, 2014, p. 9). With the increased availability of information and the open-source mentality fostered via the Internet, citizens have the knowledge and communication tools to reference and distribute information anywhere in the world at any time. In effect, this enables citizens to manufacture their places and become critical makers, not just in their homes but also in public spaces and social contexts. Mixed with a culture of autonomy and living locally, these citizens want to make more things, including their communities.

The open model below (Table 1.) shows the responsibilities for both the designer and community member in such revitalisation projects. Community engagement happens throughout the entire design process, yet roles change. In this open model, designers serve as researchers, strategists, systems thinkers, and activists for social change, leading and facilitating all phases of the design process to engage community members and foster community development until a management plan is enacted. Designers may also serve as consultants and experts in their disciplinary fields. Community members serve as participants and planners in research, strategy, and concept development phases of the design process and also act as makers in implementation and management phases.

[1] Placemaking can be defined as “the way all of us as human beings transform the places in which we find ourselves into places in which we live” (Schneekloth and Shibley, 1995, 1). “Creative Placemaking” is a partially open approach for some community renewal projects. To read more, see Markusen, Gadwa, Bedoya.

	Community Engagement				
	01. Research	02. Strategy	03. Concept	04. Artifact	05. Management
Designer's Responsibilities	Community stakeholder research Review of context & culture relevant to the project. Material research	Craft design strategy for concept and artifact(s) Craft implementation & management strategy including roles & responsibilities, budget estimates, etc.	Design development with feedback Final Intervention Strategy, providing materials, tools & methods Prototype concept	Review production methods Facilitate & participate in intervention	
Community Member's Responsibilities	Active participation in research activities such as focus groups, interviews, and charettes	Commit to design, implementation & management strategy for approval & feedback	Commit to creative development and intervention strategy for approval & feedback	Execute intervention	Execute management

Table 1. Open Model

The Case Studies: Community Renewal Projects

Like many cities in the United States, Memphis, TN suffers from a century of post-industrialised neighborhoods that no longer thrive economically and, as a result, there are many communities left with derelict areas. In response, citizens begin to take matters into their hands, cleaning up vacant lots, growing community gardens, painting murals, and organizing outdoor events. This phenomenon, a term identified as citizen-driven placemaking (Normoyle and Christian, 2016) is a DIY, tactical approach to placemaking, also noted as bottom-up or inside-out, and can be described as a citizen's action to develop, redefine, transform and rebuild their environment to create a stronger sense of place. These interventions, sometimes realised as artistic interventions and civic-minded improvements, thrive in economic down times when corporate agencies are not present. The open model taps into this phenomenon by reinforcing and enabling citizen making.

To help neighborhoods realise community renewal projects, the model has been applied; each application is slightly different but generally follows the same process guidelines. A review of four case studies—Make Memphis campaign (2012), Knowledge Quest community garden (2013), Revival Chelsea floodwall (2014), and Crosswalk safety project (2015)—examines the usage of the model. In all of the cases, a community group, with specific goals unique to their interests and needs, requested assistance in community revitalisation projects.

Make Memphis Campaign (2012-2013)

This project was a partnership with the 25 Square Initiative program established by the City of Memphis to help improve blighted areas with attention on three underserved residential neighborhoods—South Memphis, Frayser, and Binghampton. These neighborhoods suffered from an abundance of abandoned homes and required maintenance to restore livability and value for its residents. The primary objective was to enable residents to design custom panels for temporary installation on the windows and doors of abandoned homes until future purchase of these homes. A temporary and transient solution to improve the livability of communities, it was important that the production process be simple for a mixed artistic level of citizens to make a large quantity of panels. Because the work was not site-specific, the content of the designs needed to be appropriate for neighboring communities as panels may be installed, removed, and reinstalled in other locations. The artifacts were limited to inexpensive materials, primarily the use of plywood and paint, which was supplied by the city. Additionally, because the work was intended for functional use in multiple locations over its lifespan, it needed to be durable and weatherproof.

01_Research: The project began with partnership meetings to understand the goals and parameters above. Because the 25 Square Initiative already conducted in-depth interviews and focus groups, it was imperative that the designers discern and distill these findings before moving forward. Additionally, designers were invited to participate in current stakeholder meetings and conduct a preliminary on-site investigation and tour of the neighborhoods with residents.

02_Strategy: The positive message and overall spirit of the campaign was a reflection of the resident's interests and their community values. Designers planned to develop three concepts that fit within this positive theme, paying careful attention to citizen's capabilities and experience levels with art production. Community members planned to hold workshops at local destinations, like community centers or public events, to paint the boards in quantity, while city program partners installed and managed the boards.

03_Concept: Designers developed concepts for the intervention through sketching and spatial renderings, realizing three final solutions. These solutions were presented to community members and other stakeholders to discuss and initiate feedback. Designers and community members agreed to move forward with a stencil-based design, which would make it simple for community members to execute the project, providing a framework for consistency, and fostering custom design making for citizens with mixed artistic ability. Designers prototyped stencils, composed of abstract shapes and typography informed by the architectural style of the neighborhood, and created 10 sample boards to scale. Finally, designers completed a planning document, which outlined the artifact intervention strategy and management strategy for community members, with particular attention on how the production system would work, who is responsible for what tasks, and expected budget, materials, and tools needed.

04_Artifact: Community members held multiple workshops during highly attended neighborhood festivals and events to create the custom designed panels for abandoned homes (Figure 1).

05_Management: The community created and stored panels, and future workshops were planned to create new panels and touch-up worn panels as needed. The city installed, removed, and reinstalled panels.



Figure 1. Make Memphis Boards concept prototypes (left) and community workshop production day (right) at Stax to the Max festival
Source (left image): Normoyle, 2012. Copyright by Catherine Normoyle. Reprinted with permission.
Source (right image): Normoyle, 2013. Copyright by Catherine Normoyle. Reprinted with permission.

This case study was a good example of how principles of participatory design can aid in social design projects. The use of stencils allowed for design flexibility and a simple method for production, encouraging residents with less artistic experience and confidence to participate in the project. The community members were able to create many panels with the flexible design quickly, and expansion of the project was simple, working well across many neighborhoods. The experience of making was fun and approachable for residents, especially youth in the neighborhood, who were interested in learning about art production. The results, created by a range of people, were cohesive in color and form, which ultimately provided a strong sense of unity across the campaign. The quality of work, however, remained inconsistent. Although subjective, even with stencils, some panels were crafted better than others. The installation process of the panels, outlined in the management phase and committed upon by the city during strategic phases, was also less successful. Ultimately, the system may have operated better with a community leader responsible for this part of the process. In the end, the community struggled with city officials.

Knowledge Quest Community Garden (2013-2014)

This project was a partnership with Knowledge Quest, a neighborhood association in South Memphis focused on food education and literacy in the community. Knowledge Quest, who introduced a community garden in the center of their neighborhood, wanted to reclaim an abandoned apartment complex across the street as the primary location for a residency program that would provide housing to low-income residents and students, particularly those who were interested in the community garden. The primary objective for the project was to create an intervention in or around the complex that promoted the positive work the community initiated at present to help support future funding requests for the residency program. The project was site-specific; production materials were limited to plywood panels, primer, and paint, provided by outside partners. Although budgets were limited, many volunteers were invested in the project and available to participate and donate time.

01_Research: Designers began with an on-site investigation and tour of the neighborhood to learn about the community and their vision. Interviews with community members and focus groups with volunteers were conducted to discover available materials and tactics for production.

02_Strategy: The design strategy for creative development supported the community's themes of food education and literacy. The designers planned to prepare artwork under stakeholder approval for the panels. An implementation plan, outlining the designer's responsibilities, included sketching and prototyping artwork, in the form of schematic outlines, at full scale on the plywood panels. The community members, over the course of multiple weekends, planned to prep and paint the final designs. Further, a committed community leader agreed to facilitate the residents, with the help of designers, and manage the project after intervention, while a local carpenter (and resident) agreed to install the work. Additionally, designers helped write a budget spreadsheet, timeline, and management plan. The community leader took responsibility for organizing and scheduling volunteer commitments from the residents.

03_Concept: The final concept included a myriad of images that promoted the community garden, healthy eating, and literacy. There were 82 images in total. The final spatial renderings visualised the artwork across eight walls and two stories, encompassing the entire exterior of the apartment complex.

04_Artifact: The intervention was completed over a series of four weekends. This was a multifaceted intervention that required the designers and community members to work side-by-side through the process. After the residents collected materials and cut and primed the boards, designers sketched the images on the panels with spray paint. Residents were then able to color the images and proceed with installation. Teams of five to ten people contributed 40+ service hours to prime, paint and install over an eight day work session (Figure 2).

05_Management: A plan was constructed to intermittently review and touch-up the work as needed. The community leader used the project to talk to the media about the developments happening in the neighborhood, planning to apply for grant opportunities for the residency program. At that time, it was determined the artwork could be repurposed in the garden and other areas of the community if and when the residency program was funded.



Figure 2. Knowledge Quest community garden themed boards, prototype sketches (left) and final installation on apartment complex (right)
Source (left image): Normoyle, 2014. Copyright by Catherine Normoyle. Reprinted with permission.
Source (right image): Fleenor, 2014. Copyright by Natalie Fleenor. Reprinted with permission.



Figures 3. Revival Chelsea floodwall Mural, Artifact intervention with community team, 1st Panel
Source: Normoyle, 2015. Copyright by Catherine Normoyle. Reprinted with permission.

This case study was a good example of how community members can come together to create a shared outcome with an extremely limited budget. The residents were inspired to see a positive outcome in the intervention, where they could find ownership and authorship in something they created, particularly because the apartment complex used to represent something so negative in their community. Throughout the rather complex and in-depth process, the community was very engaged and invested in the outcome. Ultimately, completing the installation took longer than expected and required additional volunteers and time to complete. However, the community leader who was involved in the project assisted, quite effectively in recruiting more volunteers and planning more work sessions to complete the remaining panels and install. Some issues that arose from working with such a large cohort of volunteers was scheduling, in general, and facilitating the production process, particularly from the perspective of a specialised designer. The quality of work was inconsistent in some instances, with varying degrees of craftsmanship.

Revival Chelsea Floodwall (2014-2015)

This project was a partnership with Greater Memphis Greenline, an organisation focused on transforming unused Memphis railways into biking and walking paths. Initially, the organisation opened a call for creative assistance, after already conducting, to some extent, resident research and stakeholder input regarding an expansion of the path in north midtown. The site that they were particularly interested in developing was located by the Chelsea floodwall, and was made up of a 0.3-mile greenway stretch adjacent to approximately 70 cement panels that made up the floodwall. The primary objective was to create an artistic intervention that foreshadowed the future development of the biking and walking path in an effort to build excitement around the project. At the time, Greater Memphis Greenline and the community involved were underway with gathering city approvals and writing grant requests, hoping that an intervention may serve as a catalyst for the upcoming development project. Specifically, the goal of the intervention was to paint the floodwall, all 70 cement panels, with art. The theme of the artwork was open for consideration, but also needed to align with community interests.

01_Research: The research was already partially completed on behalf of the community by the partnering organisation and therefore, the designer's role was to review this research and begin to envision a theme for the artwork that supported the community's vision.

02_Strategy: Because of the scale of the project, the designers proposed that the intervention progress in two stages; the first intervention would include one panel (approximately 12' wide 8' high), while a second intervention would include the remaining panels and be implemented later in the year. Therefore, the first intervention provided an opportunity to set the tone for the entire project, creating a theme for the second phase of work. Community volunteers would paint the first mural with assistance from designers. Additionally, designers would help create material and budget lists and an implementation plan for the intervention. During meetings with stakeholders, options for completing the second phase were discussed including an open call to artists.

03_Concept: Designers created a final design, with a theme of revival, and presented it to stakeholders. After review of multiple color variations, a final design was approved. At a committee meeting, further details of the implementation plan were discussed including a review of production methods and tools as well as more possibilities for the second phase intervention. After the revival mural was completed, and in conjunction with another partner, the community developed a plan to invite graffiti artists into the process to complete the remaining panels.

04_Artifact: The revival mural was implemented in three days with one team of eight community members and one team lead. Designers facilitated the workshop and community volunteers primed and painted. More volunteers also assisted in material collection, distribution, and management during the event (Figure 3).

05_Management: The community organised an event to celebrate the completion of the first mural and promote the future event that would transform the floodwall into a permission wall for graffiti artists. An open painting festival event, which aligned with a local hip-hop festival, invited local and regional graffiti artist to paint the remaining panels of the wall.



Figure 4. Crosswalks Project, Production weekend in Overton Park
Source: Schuh, 2015. Copyright by Natalie Schuh. Reprinted with permission.

The project goals and outcomes were clearly strategised and executed in this case study. The project scope and outcomes functioned in the projected timeline efficiently and the final intervention was created quickly and with limited budget by outside participants. Overall, the production plan was executed well where community members successfully fulfilled their roles from prepping the surface, to painting and sealing the work. Additionally, the community followed through with their vision to host a hip-hop festival later in the year to finish the remaining panels and in total, 70 panels were completed. This project was a good example of how to produce an intervention at large scale, with limited means, and rather quickly. It also effectively showed how to invite outside groups to help complete goals that may expand the skills and capabilities of community residents. However, it should be noted that the decision to invite outside groups into the design process, in effect, takes away some of the ownership and authorship of the final artifact. Also, in this example, because the range of work completed by the graffiti artists was widely interpreted under the neighborhood vision of revival, it left little control for the community members to curate the results.

Crosswalk Safety Project (2015-2016)

This project was a partnership with Overton Park Conservancy, a park program in midtown interested in adding pedestrian walkways in multiple locations in the park. Primarily invested in producing crosswalks to ensure pedestrian safety and connect green spaces across thoroughfares, the park communicated with affiliates to see if there was a way to create crosswalks with community support. After initial discussions, the community suggested the park explore artistic applications for the crosswalks, feeling that this could add a unique component to the park that reflected the spirit of the neighborhood. Because the city had not implemented artistic crosswalks before, new standards would need to be developed based on the city engineer core's parameters, requiring an understanding of city development codes, particularly in regard to the regulations required of official crosswalks.

01_Research: Designers were responsible for all research methods—attending neighborhood association meetings with stakeholders, local affiliates, and Overton Park Conservancy program, reviewing crosswalk art in other cities, researching materials for implementation, and reviewing core engineer's city parameters. Additionally, it was expected that designers prepare a standards document for crosswalk art.

02_Strategy: The vision of the crosswalk art was open, with the understanding that all art needed to follow the parameters set by the city. The parameters included the overall dimensions, border width constraints, and restrictions of specific colors—red, yellow, and green—that communicate traffic flow, as it may confuse the functionality of the crosswalk. Designers also articulated the careful use of white in order to designate a clear pathway of movement across the crosswalk. Additionally, teams of community members were established for production of the work. Designers lead meetings on how to execute this type of project to scale including techniques for mapping out designs, discussions of appropriate use of materials, and possible challenges such as closing down the street during busy park times. Community members were also briefed on methods for preparing surfaces, painting on pavement, and protecting final work for longevity.

03_Concept: The designers created a range of concepts for final approval. In artwork development, designers considered the audience's proximity, whether pedestrians may be looking at the crosswalk from above or different perspectives and angles, because the work would be viewed from all vantage points. After the art was finalised and cross-referenced with regulated specification, they reviewed with stakeholders. About three iterations over the course of a few months were presented to stakeholders before final designs were identified. In conjunction, Overton Park Conservancy sited three locations where crosswalks were most needed in the area.

04_Artifact: Community members installed three unique crosswalks over the course of three days, with one day prior needed for purchasing materials. Four teams were created; Team A was in charge of purchasing and distributing materials to Team B, C, and D as needed. They were also responsible for food and water distribution, and general oversight of the projects. Team B, C, and D were responsible for prepping, painting, and sealing a crosswalk. Each team included about 5-8 participants with one community member participant charged with leading. Also, regulated materials such as reflective paint were used during production (Figure 4).

05_Management: Because crosswalks have a shorter lifespan based on heavy traffic and frequent use, the management plan required touchups to be done every 3-6 months by community members.

This case study was a good example of how team structures can be designed to ensure best results during intervention phases. Community members worked quickly and efficiently and were able to create well-executed designs, with a diverse range of talented artists and builders from the neighborhood. However, blocking the street to paint the crosswalk proved to be a challenge. The crosswalks had to be developed in stages to allow traffic flow to pass and because of this, one participant had to be responsible for directing traffic. Lastly, after completion of the project, the management team neglected the required touch-ups and therefore, the intervention degraded after six months. This is a good example of how management is a key factor in preserving work created once it is implemented in the neighborhood.

Key Insights

In all of these projects, design is the process, and artistic interventions and civic-minded improvements are the artifacts. Although each artifact is different in its creation, duration, audience and experience, the process is consistent and methods similar. The outcomes often have a positive impact on the community, serving as a catalyst for greater change and resulting in various expansion projects, activities, and events. Common insights and considerations are discussed below:

Engage the Community: In the cases examined, the community, for the most part, already expressed an interest in developing a project. It is important for the designer to gather and approach the community, whether it is at a neighborhood association or with an existing partner, to discuss the design process and the expectations of both the strategic designer and the community members to see if the model is appropriate for the project.

Commit to a Strong Strategy—Identify Roles & Responsibilities Early: Recruiting stakeholders for intervention and management are key aspects of this model. Both designers and community members must negotiate and compromise to find a shared project vision and agree to goals and purpose. The strategic plan, perhaps the most important phase of the model, must articulate these goals and list out in detail the concept development, artifact intervention, management goals and tactics for success. In this strategy, identifying residents responsible for tasks as well as making sure to designate a committed community leader to roll over a management plan strategy once the project is completed are essential components to successful revitalisation projects.

Sustainability is the Responsibility of the Community: To some extent, the strategic designer can only plan a strong management plan for sustainability of artifacts created in a community but ultimately, it is up to the residents to maintain the work and/or change and edit as needed. This model enables community to be makers and provides tools and techniques for success but also requires the community to take responsibility for the intervention as their own. In some cases, you will see the community stop maintaining work in which case, the intervention becomes neglected.

Recognise educational Gaps in Community: Because this model relies on the expertise of the community residents to create artifacts, this also limits it. Participants are volunteers for the project, invested in the project because it is part of their extended home. It is the strategic designer's responsibility to discover the skills of the community members and help guide ideas for intervention toward the capabilities that they have. Although the designer may have specialised skills to aid in the understanding of implementation tactics, it should be recognised that concept development for community renewal projects align with the collective skills of the residents.

Relinquish Control of Aesthetics: Issues of aesthetics arise in community renewal projects where artifacts are made in public spaces. The strategic designer opens the design process to facilitate but the community does the work and they are limited by whatever expertise they may have. It is important that the designer relinquish the control of aesthetics, as it is not a primary goal for these types of projects. This type of community engagement project work is not public art, although it may overlap this discipline in some ways. It is not a model for creating public art nor is it a model for urban design or city planning. It is a discipline that falls somewhere between public art, urban design, social design, public policy and DIY and crafts.

Evaluate the Process not the Artifact: The work that comes out of this model is resident specific and often admired by the community that made the work. This doesn't always mean that others feel the work is successful. In terms of aesthetics and craft, it is arguable that the outcomes do not challenge the work created by experts in the field. It is important to evaluate the work based on a strong process where the identified goals defined in the strategy are met.

Implications

The implications of these experiences over the last four years are all linked to one over-arching learning: Strategic thinking by the designer can be used to play a fundamental role in community development, enabling residents to take ownership of their public spaces. As a systems thinker and activist, designers can facilitate an open design process while community members make and manage the artifacts to serve their unique needs and challenges. By implementing strategic design methods for renewal projects, this model can provide citizens with the knowledge and tools to create their own places in their communities.

This model can be implemented similarly to the case studies discussed, intervening in underserved neighborhoods. Especially helpful when economy is poor and government agency are unable to keep up with public projects, citizens and designers can work together to plan and produce revitalisation project. This model can also be implemented in other types of communities, for example, citizens who suffer from a sense of disbelonging could implement this model to reclaim and take back occupied space, as designers and residents may strategise ways to realign their community with their needs, especially if government or corporations are strategically making places without community input. This model may work effectively in many diverse communities in different global contexts, keeping in mind that it is designed to prioritise the resident's perspective in revitalisation projects. Often these types of community projects provide a voice for the community to express their needs, becoming a catalyst for potentially larger, more in-depth development projects initiated by the community.

Conclusion

The significant shift in the field of design, from design as an artifact to design as a process, challenges the designer to think strategically about the entire process, examining design artifact as a single component within a much larger, more complex system of parts. This shift encourages designers to examine processes, reinforcing a systems thinking approach in the field. As designers may adopt this perspective into their practice, there is an opportunity to invite residents into the process. In social contexts, community engagement is an important part of the design process, and there is a myriad of potential for designers and residents to work together to achieve goals. Meanwhile, with the influence of DIY and open-source knowledge, citizens are more capable, creating their own places to restore livability in their communities based on their needs. This paper introduces the designer as strategist and community member as maker to solve complex social issues by implementing an open design process in community renewal projects. By shifting the roles and responsibilities in the design process, residents are able to make their own meaningful and sustainable places in community through artistic interventions and civic-minded improvements. The open model is discussed in general terms for a broad understanding of its application in diverse communities and is exemplified through four case studies. Conclusions reveal common insights in facilitating this open design model that can be applied in many different contexts as well as key implications that arise from the findings of this work. Ultimately, this model puts the control of the design of communities back into the hands of residents, whether it is to rebuild neglected areas or take back agency-controlled communities. It empowers designers to lead citizens in making changes in their community to create sustainable, meaningful, impactful places that matter to people first and not just agencies of power.

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Living labs and co-design for social innovation: mapping the European model to Asian societies?

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ABSTRACT

Social innovations, as “new ideas of simultaneously meeting social needs and creating social relationship or collaborations”, is a promising way to solve social wicked problems, because it can make the traditional boundaries blur by creating new social relationships and collaborations. Designers are at the center of social innovation, by contributing to “co-design” aiming at social change, where designers empathise with people or “users” and facilitate the co-generation of ideas. While Social Innovation and Co-design initiatives are numerous in Europe (DESIS report, 2013), there are no so common in Japan. In this paper, we review the type and number of places dedicated to co-design for social innovation, like Living Labs and FabLabs, in the world and in Japan. Second, we explore the assumption that some characteristics of Japanese culture, i.e. high Power Distance, high Uncertainty Avoidance, low Individualism (Hofstede, 2010), might prevent the development of the European co-design model in Asia, and more specifically in Japan. We hope to further imagine new ways to conduct social innovation in the Japanese society and to create new tools for that purpose.

keywords

co-design, living labs, cultural dimensions

INTRODUCTION: DESIGN FOR SOCIAL INNOVATION IN THE WORLD, IN JAPAN

In order to solve social issues that are too complex to be solved by a single stakeholder, several approaches have been proposed to solve problems towards sustainable society. (Vezzoli C. et al., 2015) In the series of approaches social innovations, as “new ideas of simultaneously meeting social needs and creating social relationship or collaborations”, is one of promising ways to solve social wicked problems (Rittel H. W. J. et al., 1973), because it can make the traditional boundaries blur by creating new social relationships and collaborations. Designers have a role to play in social innovation, by contributing to a co-design process aiming at social change. (Manzini E., 2015). International networks of researcher towards a sustainable society have been created. “Design for Social Innovation and Sustainability Network” (DESIS) is one of the networks aiming at using design knowledge to co-create social innovation. DESIS Networks (2016) consists of 40 labs located from the world. “Design and Social Innovation in Asia-Pacific” (DESIAP) research network (2016) observed a growing number of social innovation being established in Asia, especially Hong Kong, Singapore, Korea and Japan. We are especially interested in the situation of Japan where the main actors of social innovation are non-profit organisations (Fujisawa Y. et al., 2015) and where the number of places like Living Labs is still very limited (DESIAP research network, 2016). One of the few examples is the “Fukuoka Citizen-Led Innovation” and its “Pilot Lab”, led by Re:Public Inc. in a public-private partnership (Re:Public, 2016). While design for social innovation is widespread in Europe, this approach is still unusual in Japan.



Figure 1. Map of Design and Social Innovation projects in Asia Pacific, DESIAP [12]

Our objective is to imagine new ways to conduct social innovation in the Japanese society and to create new tools for that purpose, as (Akama & Ivanka, 2010) in Australian context. In this paper, we describe Living Labs and Co-design in the world; then we give a preliminary picture of the situation in Japan to identify some differences that will be further researched. In a first section, we review contexts and characteristics that enable design for social innovation.

Especially, we look at the type and number of places dedicated to co-design for social innovation, in the world, like FabLabs and Living Labs. In a second section, we try to characterise the hindrances, especially cultural, to the development of co-design for social innovation in the specific context of Japan.

Literature Review

The scope of the literature review was the current situation of design for social innovation activities in the world, including, both process and places as innovation enablers, and a comparison of cultural dimensions (Hofstede, 2010) of Japan and Scandinavia, where co-design was originated. This review covers both the theoretical background of social innovation and real cases, to give a rough picture of Co-design for Social Innovation in Japan. The co-design approach is the process in which actors from different backgrounds and various levels of design expertise share their knowledge to create innovations together; it has the power to change users’ perception of things, which is sometimes necessary to implement social innovation (Vezzoli C. et al., 2015). Place is another important infrastructure elements of collaboration to give chance to meet and/or work together. (Manzini E., 2015) There have been several concepts of spaces allowing enthusiasts to meet and/or work for social issues. In this paper, Fab Labs and Living Labs among others were focused as places dedicated to co-design for social innovation.

The research terms employed in reviewing of theoretical background and case studies in Europe were co-design, Design for social innovation, Living Labs and Fab Labs. To review the situations in Japan, google search was used because most of the activities in Japan have been originated from practical context rather initiated and followed by academic research. The search term were Japanese words which are equivalent to the words used for literature review, as well as the expression “social design”, commonly used in Japan for “design for social innovation”.

An Empathy-based Design Process: Co-design

There have been two approaches, user-centered design and participatory design research. In the user -centered, which has been developed in US, designer interview and/or observe passive uses. On the other hand, in the participatory design research, which has been going on under the name of in Europe for nearly 40 years, user participate in idea generation and concept generation. These two approaches are influencing each other. Figure 2 shows a current state of human-centered approach. In the area of participatory design research, co-design appeared (Sanders, 2008). Kleinsmann M. (2008) defined co-design, as follows:

Co-design is the process in which actors from different disciplines share their knowledge about both design process and the design content. They do that in order to create shared understanding on both aspects, to be able to integrate and explore their knowledge and to achieve the larger common objective: the new product to be designed.

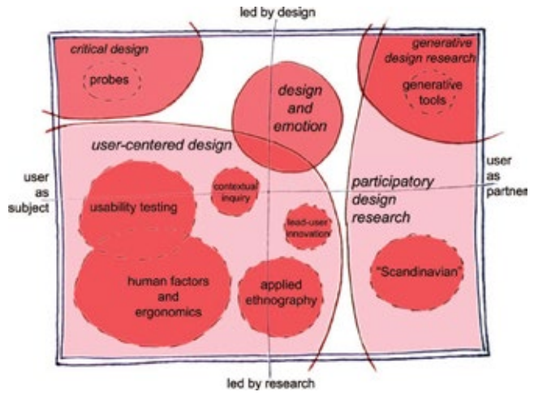


Figure 2. The current landscape of human-centered design research as practiced in the design and development of products and services. [Sanders, 2008]

The transition between classical user-centered approach and co-design differentiates the role of designer. (Figure 3) In classical approach, researchers observe users and report to designers. The designers merge the information given by researcher and the knowledge of technology to add concept and idea of products.

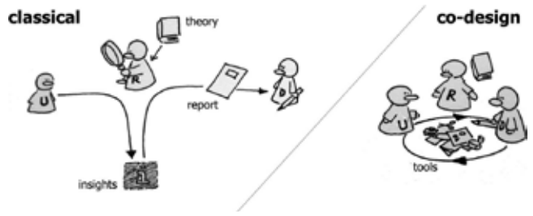


Figure 3. Classical roles of users, researchers, and designers in the design process (left) and how they are merging in the co-designing process (right). [Sanders, 2008]

On the other hand, in co-design approach, the role of designer became mixed up of designer and researcher. The designer supports and facilitates the generation of ideas by other participants and the development of knowledge with tools which are developed by the designer and/or researcher (Manzini E., 2015). Those tools are accessible for everyone as toolkit, which enables non-expert to follow a design process (Sanders, 2008). Several toolkits have been formulated and published in the world. We picked up three toolkits, HCD Toolkit (2009), DIY Toolkit (2014) and Practical Guide for Social Design (2013) as examples of them. Table 1 shows summary of each toolkit. Three toolkits include tools which allows designer to emphasise with user. To gain empathy of user, all of the toolkits have tool of interview, ethnographic research and workshops with user.

Toolkit	Publisher	Characteristics
HCD Toolkit	IDEO (US)	Toolkit includes tools covering an entire project mainly in developing countries and aiming at design for user with empathy
DIY toolkit	Nesta (UK)	Toolkit includes tools covering an entire project and management of an organisation. Main issue is not empathy but management of a project.
Practical Guide for Social Design	Design+Issues (Japan)	A guide book consisting of seven steps, which start from how to choose partner and locations. influence of HCD toolkit. More attention on defining problems and initiating a project

Table 1. Characteristics of three design toolkits

Places for Co-design: FabLabs and Living Labs

FabLabs, launched by Gershenfeld N. (2007) at the Massachusetts Institute of Technology, are a global network of spaces that allow citizens to access fabrication tools, especially digital fabrication tools, and to make innovation happens through collaboration with people either in the same or other FabLabs (Gershenfeld N., 2012). This international network distinguishes FabLabs from other maker spaces. Fab Lab is spread both in Japan and in other countries; none of them is the same as each lab are gradually formed by founder and makers gathering there. Kohtala, C. (2014) described a FabLab in Lyngen, Norway, population 3,000, that plays the role of a community center or a "third space". The regional mayor comes to the FabLab to discuss local problems. Fab Lab as a community center might imply that Fab Lab could be a good place for co-creating solution for local community problem besides a place for personal fabrication like other maker spaces.

Japan has sixteen FabLabs. According to their websites, it seems that they are mainly for education and personal fabrication purposes, and they do not play the role of a "third space" or community center in Japanese society.



Figure 4. Location of Fab Labs in Japan (FabLab Japan 2016)

Living Labs methodology can provide new perspectives in participatory design. Although there is a lack of common definition of Living Labs, Følstad A. (2008) identified two common and three divergent contributions to the innovation and development process. Dell'Era, C. et al. (2014) listed thirteen definitions of Living Labs. In this paper we would like to use definition by The European Network of Living Labs (ENoLL) (2016), "user-centered, open innovation ecosystems based on a systematic user co-creation approach integrating research and innovation processes in real life communities and settings". Although in definition, Living Labs are spaces for co-design, co-design is sometimes seen as an ambitious way of collaboration. (Følstad A., 2008). (Kommonen K.H., 2013) showed that companies are interested in the Living Labs framework. As of today, the body of research on methods and processes used in Living labs is limited (Følstad A., 2008) but in Europe, Living Labs are widely spread, e.g. Malmö Living Lab in Sweden (Hillgren P.A. 2013).

In Japan, the number of Living Labs is still limited, as there is officially only one Living Lab in Tokyo, registered in ENOLL. The number of academic studies is quite limited as well: Nishio.K et al. (2016) investigated Living Labs mainly in Europe to forecast the impact of Living Lab in Japanese society; Ozasaka T. (2014) and Ikegami M. (2014) explored the role and key conditions of a Living Lab in a university, for collaborating with a local community. Apart from Living Labs, the "Fukuoka Citizen-led Innovation" aim at a similar purpose, through a public-private partnership operated by Re: Public, a for-profit organisation founded by the local government. Once a year, Fukuoka Citizen-Led Innovation hosts workshops to tackle the local government agenda, with citizens who went through an application and selection procedure. Although it is not clear to what extent the workshop outcomes are practically implemented in the real world, the initiative is unique in Japanese society, and promising.

Co-design and Cultural Differences

Co-design and Living Labs are much developed in the Scandinavian region, while they are still developing in Japan. We assume that this development, or lack thereof, is related to cultural factors, among other factors. In fact, research showed that the cultural background of people influence their attitude in collaborative design activities (Detienne et al., 2016). In this section, we explore cultural dimensions and formulate hypotheses about their relationships with the development of Living Labs and Co-design approach. Hofstede (2010) described the "cultural dimensions" that characterise groups of people from a given culture, or country in his study (cf. table 2). Japanese scores and Scandinavian scores (average value of scores of Finland, Sweden, Norway and Denmark), as shown in Figure 5, show major differences in all six dimensions. Since designing is a social activity based on collaboration (Detienne et al., 2016), we assume that the score differences for Power Distance, Uncertainty Avoidance and Individualism dimensions might have a major impact on the way people engage in collaborative design activities and especially co-design.

Criteria	Definition
Power Distance	the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally.
Individualism	the degree of interdependence a society maintains among its members.
Masculinity	the fundamental issue here is what motivates people, wanting to be the best (Masculine) or liking what you do (Feminine)
Uncertainty Avoidance	the extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these is reflected in the score on Uncertainty Avoidance.
Long Term Orientation	how every society has to maintain some links with its own past while dealing with the challenges of the present and future
Indulgence	the extent to which people try to control their desires and impulses, based on the way they were raised.

Table 2. Cultural dimensions, as defined by Hofstede G. (2010)

More precisely, Power Distance scores, 54 in Japan vs. 28 in Scandinavia, show that Japanese society is more hierarchically organised that Scandinavian societies, which might be a barrier to fruitful a design collaboration between people with different backgrounds, skills and roles in the society. Individualism scores, 46 for Japan, a bit higher than other East-Asian countries, and 69 for Scandinavia, show that Japan is a collectivistic culture, where people tend to put more value on harmony of a group which he/she belongs to than his/her individual expression. Uncertainty Avoidance is high in Japan, 92, one of the highest in the world, while it is rather low in Scandinavia, 40, which implies that Japanese people are reluctant to do things without precedence.

The differences in cultural dimensions are connected to the concept of "Context" (Hall, 1977): Lower individualism is linked to high-context culture, where many things are not orally mentioned and the listener should infer what the speaker implies. Based on context theory and face framework, Hall et al. (2004) compared societies with high and low individualism, as shown in Table 3.

Preliminary Field Study

In order to test the aforementioned hypothesis, we conducted Design Protocols and interviews of co-design participants. The objective of the field study is to get feedback from the field, about the influence of cultural factors on co-designing activities. As the study is in the preliminary stage, the paper only reports an e-mail-based interview with a senior designer at a global design firm with an office in Tokyo, Japan. The respondent has been facilitating design workshops for about ten years, both in Europe and in Asia. Table 4 shows a summary of his consideration regarding purpose of the workshop. He does not plan the same exercises on different purposes. He mentioned three purposes as examples, participatory research aiming at gathering information, co-create ideas aiming at ideation and convergence aiming at having stakeholders align on a common vision.

Feeling permission. "It is important to create an environment where the participants feel free to talk." The hierarchy between participants seems to be an important factor regardless of nationality of the participants because "people don't behave the same if their boss is in the room".

Being with strangers. "Generally speaking, too little time won't allow you do achieve anything of quality, people need time to immerse in the context […]. It also requires time for them to get comfortable in front of strangers."

Being under time pressure. On the other hand, "time pressure puts people in the mindset of getting things done. For example, in ideation time pressure lets people be more effective although the quality of the concepts can be different. And while converging, time pressure can help the decision making by nudging participants to be efficient in their conversations and decision making."

Cultural differences. "The dynamic of a Japanese and Western workshops can be similar. The purpose is the main discriminator. There are three major differences due to the nationality of the participants, and which the facilitation is differently adapted to." The subjective perception of the respondent about cultural differences is described in Table 5.

Conclusion

Co-design for Social Innovation is notably less developed in Japan than in Western countries, especially Scandinavia. There are several reasons for that and we assume that cultural factors are one of the most impacting factors. In this preliminary study, we identified Japanese cultural characteristics, as described by Hofstede (2010), that might prevent the mapping of the European co-design model to Japanese society. "Power Distance" might prevent equal participation in a workshop with people with different roles or status, a low "Individualism" might prevent from freely discussing others' ideas, for the sake of a good harmony of group and "Uncertainty Avoidance" might be a barrier to explore novel solutions. There is a need to develop a model of Co-design for Social Innovation that is perfectly matching the local cultural characteristics.

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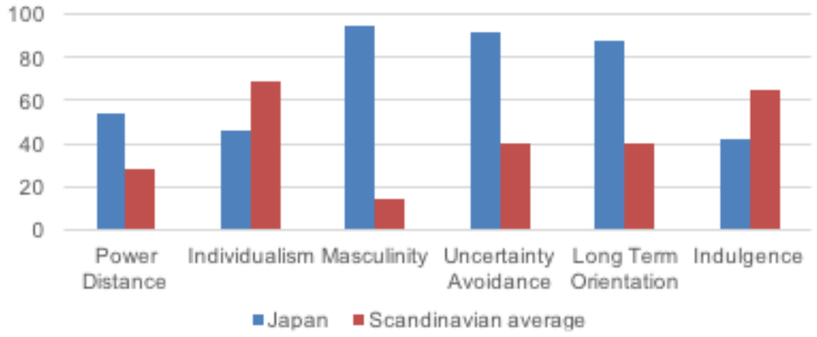


Figure 5. Scores of cultural dimensions for Japan and Scandinavia

Key elements of "face"	**Individualistic/low-context (Scandinavian countries)**	**Collectivistic/high-context (Japan)**
Identity	Emphasis on "I" identity	Emphasis on "we" identity
Concern	Self-face concern	Other-face concern
Need	Negative face need	Positive face need
Supra-strategy	Self-positive and self-negative facework	Other-positive and other-negative framework
Mode	Direct mode	Indirect mode
Style	Controlling, confrontational, solution-oriented style	Obliging, avoiding and affective-oriented style
Speech acts	Direct speech acts	Indirect speech acts
Nonverbal acts	Individualistic nonverbal acts, direct emotional expressions	Conceptualistic (role-oriented) nonverbal acts, indirect emotional expressions

Table 3. Comparison between facework in Individualistic and collectivistic culture (Hall et al., 2004)

Purpose of the workshop	**Expected outcome**	**Points considered**
Participatory research	Ideas generated users to uncover underlying needs, desires, pain points.	- efficient on sensitive subjects, for example, one requiring to criticise his/her own work - by making, people express more than by just saying.
Co-creation of ideas	Inputs of stakeholders, such as client, partners, staff, users, experts while generating concepts to ensure their quality.	- deeper preparation about the subject, especially a good challenge framing. - the more precise is the assessment, the better will be the ideas. - providing stimuli like benchmarks or forced-associations exercises helps to get things started.
Convergence	decision by decision maker by reviewing a bunch of concepts and turning them into fewer/better ideas, then selecting the one they want to carry through.	- establishing guidelines for decision making. - reducing the number of participants so that the decision making is easier.

Table 4. Three activities in design workshops (by Tokyo-based designer at a global design firm)

Difference	**European workshops**	**Japanese workshops**
Creative style	Tendency to engage easily in activities but to diverge a lot and lose focus quickly. Facilitation giving a broader assignment and then do a lot more moderation to keep them on track.	Tendency to be more quiet but stick to the assignment more rigorously but might need more guidance.
Leadership	Tendency of a stronger natural leadership dynamics.	Tendency to listen to each other more. Every participant gets a chance to speak out.
Discussion style		Japanese language seems to be more evasive, making it harder to make clear points. Concepts generated tend to get fuzzier than in English workshops. Facilitation trying to include some dedicated time to narrow down / precise concepts.

Table 5. Subjective perception (N=1) of cultural differences in European and Japanese design workshops

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Re-negotiating politics of fear in public spaces – Politics of Fear Collective (POF)

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ABSTRACT

In the realm of public space, both the rational and emotional are closely intertwined. The so-called refugee crisis in Europe has been instrumentalised by "fear entrepreneurs" (Furedi, 2005) (politicians, media, etc.) who benefit from the creation of irrational fears amongst people. The project "Re-Negotiating Politics of Fear in Public Spaces" aims at inviting people of the city to discuss their personal notions of fear and hope for the future in general, with an additional focus on how fears are constructed in the context of the rise of right-wing parties in Europe. In this paper, a discussion of participatory design strategies that investigate fear in its rational and irrational forms and its relativity to the current refugee situation is present. Fears left unspoken cannot be negotiated or contested. Fears that are outspoken and recorded are immediately becoming contributions to a continuous debate that can generate a wider discourse on the matters of concern. Listening to fears and hopes is understood as a political action (Lacey, 2013), and will be applied in our artistic research as a participatory praxis. Draper (2013) describes an artistic research process by using the metaphor of an elephant described from different perspectives of blind men. The summary of descriptions in turn designs an image of the potential object. In the same way, collated descriptions of fear from different perspectives may indeed design the image of itself. Fear should become again a sincere emotion and not a manipulated fiction, one that interfaces with reality and one that calls into question, "What kind of (urban) future do we want?"

Keywords

fear, arts as urban innovation, practice as research

1. INTRODUCTION

The project idea was born in late 2015 listening to a lecture by architect Hilde Heynen on "Women in public space" during an autumn school of the research group TRADERS (2015). She described how the modernist city – and its public spaces – has fostered some kind of gender discrimination. Politics of Fear collective were inspired by the book of Austrian sociolinguist Ruth Wodak titled "The Politics of Fear" (2015), and followed the aftermath of the incidents that occurred on New Year's Eve 2015 in Cologne – including its media reactions, the so-called refugee crisis, the fear entrepreneurs (Furedi, 2005), and the affiliated rise of right-wing parties in Europe. In her book Ruth Wodak analyzes the linguistic strategies employed by right-wing populist parties and shows how they seek to foment fear through the deliberate use of disinformation, falsehoods and fantasised threats. While varietal right-wing populist parties differ depending on their historical and socio-political contexts, there is a recognisable pattern in the propaganda methods used. The project "Re-Negotiating Politics of Fear in Public Spaces" aims at exploring notions of fear by facilitating a public discussion by means of art and design interventions in public space. The objective is to investigate the media's role in the construction of fear and to negotiate and visualise the fears and hopes of people through artistic means, in order to challenge right-wing supremacy and their tactical play with people's concerns for the future.

1.1.Fear and Policy Coherence

Decades ago, Sam Keen, author of "Faces of the Enemy: Reflections of the Hostile Imagination" (1986a) describes how apparitions of the hostile imagination are constructed: a homo hostilis or fear entrepreneur (Furedi, 2016), is the one who invents fear. Keen addresses the psychological roots of enmity and hatred, which is coherent with fear; "our private enemies and everyday prejudices; the dark emotions of paranoia and rage; how we perpetuate warfare in its many modes – the civil war within the self, the war between the sexes and the political war between Us and Them" (Keen 1986b). Keen's book demonstrates with a huge range of images – used as propaganda in media – the reflected impact of these distinctions and categorisations on society. Populists and politicians make use of the construction of "them" (minorities, political and ethnic groups) to blame and legitimise their exclusionary policies. Under the guise of "democratic media", populist parties make use of scandals, false accusations, victim-perpetrator reversal, conspiracy theories or scapegoating to perpetuate the dividing notion of "them". They are also using the discursive strategy of "calculated ambivalence", where they address multiple audiences with double-messages to open the door for politics of denial. As we live in a rising monologue social culture (compare "us" vs. "them"), it appears crucial to react with dialogue and participatory approaches. The experience of real life seems to be possible only by relativizing everything that divides humankind, where life is just possible within a dialogue, in which the individual opens up "in liberty" (Mateus-Berr, 2007, pp. 25–27; Bachtin, 1996, p. 32, 35, 80, 139), to speak in Claire Bishop's words: "There must be an art of action, interfacing with reality, taking steps – however small – to repair the social bond." (Bishop, 2012, p. 11).

With reference to existing research, it can be explained how "othering" can provoke fearful reactions to people with a "foreign appearance". It is argued that through the reception in media, and the utilisation of fear in public space by far right-wing parties for their own political advantage, there is a danger of irrational fear being generated.The concept of fear is undoubtedly broad and therefore this paper will address specifically the characteristics of individual and collective concerns, as well as attempt to make a distinction between rationally and irrationally-constructed fear. Misinformation, i.e. the representation of false facts (being presented by the media and simultaneously utilised by right-wing politicians), and playing with irrational fears (e.g. using a rhetoric of young male refugees posing a security threat in public space or refugees posing a threat to local labour markets) have led to an overtly doubtful social climate, which is characterised by mutual mistrust and fear/concerns for the future. In 2012, the cultural theorist, urbanist and "philosopher of speed" Paul Virilio in an interview about "The Administration of Fear" argued that "the informational bomb" plays a prominent role in establishing fear as a global environment because it "allows the synchronisation of emotion on a global scale . . . The same feeling of terror can be felt in all corners of the world at the same time. It is not a localised bomb: it explodes each second, with the news of an attack, a natural disaster, a malicious rumour". This phenomenon, according to Virilio, led our society to create a "community of emotions" as an extension on a global scale to the "community of interests" shared by different social classes (Virilio, 2012, p. 30).Contemporary circumstances show that in many cases fear has lost its relationship to experience and therefore fear can disorient and distract us from our actual lived experiences. In this scenario, fear has thus become an emotion of irrational fiction. The sociologist Frank Furedi (2006, p. viii) makes clear that "the artistic celebration of the theme of fear indicates that it has become a cultural metaphor for interpreting and representing the world around us". Furedi notes that throughout history human beings have had to deal with the emotion of fear, but that fear changes all the time. He assumes that "one reason why we fear so much is because life is dominated by competing groups of fear entrepreneurs who promote their cause, stake their claims, or sell their products through fear. Politicians, the media, businesses, environmental organisations, public health officials and advocacy groups are continually warning us about something new to fear" (Furedi, 2005).

1.2 Public Space as Arena and Listening as Method

Public space, it is argued, ought to have the function of an arena where fears can be negotiated and contested. The project "Re-Negotiating Politics of Fear in Public Spaces" is an attempt to confer a mediatised discourse to the public realm using approaches of participatory design, by the methods of Listening as Arts-based Research (LAR). Fears that are actively listened to and recorded are immediately becoming contributions to a continuous debate that can generate a wider discourse on the matters of concern. The project set out with a series of design interventions in public space with the objective to negotiate and visualise the fears and hopes of people. The design approaches and methods, as well as the presentation and documentation of the interventions, are further elaborated below.

2. The Austrian Agenda

On New Year's Eve 2015, hundreds of women were sexually assaulted on central squares in Cologne and other German cities. There was a public outcry over this incident, and it received a lot of media attention not just in Germany but in Austria as well. In the centre of the controversy, state officials were accused of making false statements concerning who were the perpetrators. In the aftermath of the incident, the dispute continued as voices of women from other cities, claiming to have been sexually assaulted in public space came to the fore. Austria was no exception as newspapers published numerous reports on incidents of sexual assault in public space, particularly at the Viennese transit centre Praterstern. The heated climate thus provoked a media backlash that led to new discussions concerning the effects of migration on the security of public space.Through the reporting (or non-reporting) of the New Year's Eve event in Cologne, the incident was framed solely as a crime provoked by refugees and foreigners. These circumstances aroused distrust amongst the general public and were used as an abusive tool by right-wing parties. Two German journalists – one from Cologne and the other from Berlin – conducted an investigation of the media coverage about the subject. They analyzed hundreds of media reports, including all major regional, national, and international news reports on the incident in Cologne that were published from December 31st 2015 till the second week of April 2016. They read reports, official documents and talked to witnesses, victims and experts of refugees and immigration law, asylum seekers themselves, members of the media, and representatives of refugee organisations (Brenner, Ohlendorf, 2016). According to their investigations, it is likely that the offenders were a few dozen men of North African origin and not 1,000 newly arrived refugees, as numerous newspapers said it, right after the incidents. Their report featured two interviews, one by a refugee stating that he does not feel comfortable walking the streets of Cologne anymore because he feels suspected to be an offender. Another by one of women that was harassed stated that, even though she knows better now, a feeling of fear arises every time she sees a person she perceives of as a refugee. In an Austrian context, this extreme media framing of the "other" could be even seen on the cover of the magazine Falter (Falter, 2016, cover). A black and white image shows a highly ambiguous mass of black-haired and dark-eyed men attacking and stripping crying white women and even a policeman. The Falter magazine was rebuked by the Austrian Press Council in April 2016 because the cover violates their code of honour by generalised disparagement and discrimination, although being a left headed magazine. Especially for Falter, ambiguous covers like these were quite unusual and the paper has always been known for their pro-diversity coverage.



Figure 1. Falter's cover, Süddeutsche and Focus

Images such as the one above can create prejudices and fear via media. Keen (1986, p. 88) shows in his book, "Faces of the Enemy", images of the "enemy as rapist" depicted as animalistic (gorilla, bulldog) or Bolshevik or American. Although these examples are from diverse cultural backgrounds and are displayed as colored images, most of the aggressors are pictured black. Pornographic associations used by Süddeutsche Zeitung and FOCUS are used to call attention to ignominies of the enemy. The project "Re-Negotiating Politics of Fear in Public Spaces" focuses on such construction of fear in media and its contextualisation in the rise of right-wing parties in Europe. Moreover, Europe faces an increasing fear of refugees and of the consequences of current migration movements, which is repeatedly reinforced by the media. But is it real? Is it constructed? Is it instrumentalised? If one is relying on the numbers of statistics in Austria (Statistik Austria, BMI, 2012), at a first glance a terrible picture is emerging: the share of non-Austrian pupils imprisoned and/or convicted is a multiple of the Austrian share. In 2012, approximately 47.9% of the prison population and 31.8% of those convicted in Austria were of foreign origin, while the overall proportion of non-Austrians in the population was only 11.5%. But again, these numbers have to be compared to Austrian law and the ease with which foreigners are criminalised (BMI, 2012; IRKS, 2012; Amnesty International, 2009). In winter semester 2015/16, students from the Department of "Social Design. Arts as Urban Innovation" at the University of Applied Arts Vienna were invited to participate in and develop the project "Re-Negotiating Politics of Fear in Public Spaces", in collaboration with refugees from the MORE-project of Austrian universities, which opened up lectures at various universities for refugees. The goal of the project is to survey and collaboratively create a public visualisation of fear. It is designed to encourage public debate on the subject of (constructed) fear and (feelings of) uncertainty in public space in order to expose and deconstruct the mechanisms by which fear is generated, through the act of listening.

3. Materials and Methods

3.1. LAR (Listening as Arts-based Research)

Listening is a research method in interview-based disciplines as journalism, sociology, and anthropology but appears to be new in arts-based research. Some disciplines discovered art methods to integrate in their own methodology, like visual sociology, which has been developing new approaches as the British sociologist and media theorist Gauntlett (2006, p. 2) argues. He believes that art materials and creative methods are advantageous in social research because they allow time for a more considered answer to a question than a verbal question and answer format. Integrating art in sociological approaches empowers a "reflective process, taking time, so the data you end up with is the result of thoughtful reflection" (Gauntlett, 2006, p. 2). LAR is thoughtful and reflective, means taking time for attentive listening. LAR engages with active and attentive listening as arts based methodology. Listening is understood as a key mode of participation in the public sphere.

There are few studies of contemporary audiences as listeners, except to music. Lacey, a leading historian of radio, claims in her book "Listening Publics: The Politics and Experience of Listening in the Media Age" (2013, p. 3), that listening as public action has been neglected for a long time. As speech is spoken aloud, it demands and needs a listener to be actualised. Listening involves an openness towards others and is believed to be a political action. Warner (2002, p. 50) describes "the public" as a space of a discourse organised by nothing other than discourse itself and being actively involved in the public consists for him of "speaking, writing and thinking". Benjamin Barber was the first theorist who took listening seriously as a political practice, "a mutualistic art that is by definition not extant in situations of conflict and difference (in Bickford 1996, p. 13). Bickford agrees with Habermas´ understanding of communicative action that requires all participants "to be oriented to achieving, sustaining and renewing consensus" and proposes Political Listening as a corrective to the confirmative limitations of consensus based politics" (Bickford 1996, p. 17-19; Lacey 2013, p. 165). Conversation is a central element of this methodology. Bakhtin (1986, p. 69) suggests a radical rejection of the dichotomy speaker/listener, and believes that both are interchangeable elements in the communication process. The duality of speaking and listening, how the latter actualises the former, enables spontaneously gathered impressions and feelings to emerge, which can be constitutive of a general perception of public space. These inherently relate to the architecture and pre-formed opinions; obtained from other people, newspapers, or magazines (Lefebvre, 1991). Ways of communication can be experimented with by creating scenarios of social interaction between "strangers", i.e. holders of various opinions. Design can help to develop what Richard Sennett makes an urgent claim for in his book "The Fall of Public Man" (Sennett, 1992), namely rituals and norms that can structure the communication between strangers. Plurality is understood as a basic precondition of our capacity for speech and action (Arendt, 1958, p. 176).

3.2. Working methods and decision process

3.2.1. POF (Politics of Fear Collective)

In summer 2016, the Collective "POF" (Politics of Fear Collective) was founded, however since March 2016, students from the Social Design. Arts as Urban Innovation department at the University of Applied Arts Vienna have been meeting on a weekly basis. As the project was announced through the MORE initiative, some refugees joined the programme shortly thereafter. Three staff members of the University and about fifteen students are actively engaged. This diverse team consisting of artists, theoreticians, and designers from various fields choose to manage their contributions through participative decision-making. This means involving all stakeholders (students, staff and refugees) in the decision-making process and research of co-design methods, i.e. those, which support participants in telling and informing the research team. The interventions are planned as co-design activities in public space. Members act as ambassadors, intervene in various public sites and present interim results at a range of conferences.

3.2.2. Fence as a Symbol

Historically the fence was "invented" in times of human settlement for defining property and providing protection against enemies. Today a fence serves as a symbol of societal exclusion and metaphor of political strategies against refugee aid. This is visible in the current construction of the 175 kilometre long fence along the Hungarian – Serbian border. The rhetoric of "Politics of Fear" is constructing imaginary walls between "us" (the "natives") and "them" (the "outsiders"). At the same time very real walls are constructed on the borders inside and outside Europe too. POF decided to implement a 15 metre stretch of barbed wire fence to make a clear reference to the newly built borders inside and outside of Europe, and used it as a display mechanism for the collected fears and hopes for Austria and Europe in general; to make the "invisible" walls visible.

3.3. Social Design

The points of departure for the project are an on-going series of participatory interventions in public space. These interventions employ a variety of materials that act as nonverbal vehicles of communication, and are used to encourage users of public space (namely, "passers-by") to overcome inhibitions and wilfully express themselves on personal and sensitive issues. Hypotheses such as "[r]esearch begins with a question or an ill-defined inkling that there is something potentially interesting or troublesome in a certain domain" (Kozel, 2012, p. 209) are to be tested. What motivates the POF collective is the notion that hoarded fears that lead to a degrading or offensive attitude towards others go alongside a moral obligation to dispel them. Perceptions of public space are both a primary concern for the development of the project, as well as the arena of its realisation. The POF team members give input but the participants ultimately shape the space. It is acted upon the thought that "[d]esign and emotion have to be ruptured from products and bonded to redirect actions towards sustainment" (Fry, 2011, p. 134f.). It is anticipated that the knowledge acquired from the interventions will contribute to a wider discourse on design strategies. Cross (1971) always argued strongly for new approaches in design "that could contribute to the inclusion and participation of citizens at large in design and societal planning" (Brandt et al., 2013, p. 147). The collected data and visualisations will also feed into the knowledge of citizens' needs and feelings about public space. Urban planning and design has undergone a so-called "cultural turn" meaning there is an awareness of, and attempts to translate observations of spatial practice in public space to institutionalised planning (Tornaghi & Knierbein, 2014).

3.3.1. Vienna Action at TBA21

The actions began with an intervention at TBA21 (Thyssen-Bornemisza Art Contemporary) in Vienna, which attempted to probe the public space with a physical installation, as well as provoke a public reaction. This intervention occurred on the Sunday of the Austrian Federal President elections (May 22nd 2016), which became a tight race between a right-wing and a moderately left-wing candidate. Results fluctuated around the 50/50 percentage mark throughout the course of the day. This created a tense atmosphere which is exactly the climate that POF is interested to work in. During the course of the action, passers-by were invited to sit on picnic benches and exchange thoughts for fruit through a gap in the barbed wire fence. People could sit down on either side of the fence and share their fears and hopes with the research team (see Figure 2). After talking with the team about their concerns, participants were asked to note these down on paper slips and attach them into the framework of the fence. This meant that the responses could be easily read by others and become starting points for a continuous discussion.

A crucial aspect of the intervention was that the research group were actively listening to the participants. That is to say, the intervention was both playful and at the same time thought provoking, creating a low-threshold methodology for people to engage with their fears and discuss them visually with other participants. Another approach was the "experimentation" with fear. As part of the intervention, passers-by were invited to touch a liquid mixed with corn-starch, which made the substance suddenly solidify when handled and was thus meant to symbolise fear. The haptic experience made it possible to speak about fear in a metaphorical sense. When being asked about the experience, some people explained that this was a stimulating exercise, which helped them to define a certain aspect of fear that could later be written down and added to the fence. This activity enabled us (as artistic researchers) as well as the participants themselves to start a conversation about their fears, which was not guided by forced constraints of language and polarised discourse. The aim of the exercise was to convey that fear is graspable and has its own mechanisms, which can become a subject of discussion. The statement "If you do not recoil, fear is not uncomfortable" (a comment by one of the participants) could be interpreted that if fear is treated consciously and if one chooses to engage with it, its scary components can be shed and fear does not have to lead to aggression.



Figure 2. Politics of Fear Picnic, Negotiating Fear at TBA21, photo © Ruth Mateus-Berr

3.4. Linz Action at afo (Architekturforum Oberösterreich)

The Politics of Fear project continues to take action in other public sites and cities in Austria and beyond. POF Collective were been invited to make an action in collaboration with the afo (Architecture Forum of Upper Austria) in Linz, the capital city of the Upper Austria region. The organisation offered POF the chance to make use of the

public square in front of their headquarters at Herbert Bayer Platz at the end of September 2016. Although the site is not the most populated public arena in Linz, the adjacent architecture forum provided the opportunity to play more with spatial configurations. While the intervention at TBA21 was mainly a research operation, POF are developing the strategy for the Linz action with an experimental approach, observing the participant's reaction and interaction with the conceived scenario. By taking our 'practice as process' to the next stage, we aim to consistently develop our methods and strategies in accordance with the very material that is generated from within the project as a direct outcome of the action. This type of research results in outputs that may not be text-based, but rather a performance, design, film, or exhibition (Arts and Humanities Research Board 2003, p. 10; Sullivan 2010, p. 78)

On account of the responses from the first action in Vienna featuring comments about the recent influx of refugee migrants arriving in Austria, POF decided to use these themes as a starting point for the following action in Linz. Our question was, "How can the fears surrounding this hot topic be materialised not only as a visual display, but also as a disturbance of the spatial configuration in the square?" Situated in the heart of Linz, an Austrian city with ca. 190.000 inhabitants, the square features an interesting arrangement of objects, differentiation in levels, as well as common seating and flora. The POF Collective proposes an intervention that utilises existing elements of the site in order to question how the manipulation of a space can affect one's perception and emotional reaction to a place. In other words, we want to investigate the powers of manipulation in the field of fear construction. How can we play with the dramaturgy of space? How can we make theatre out of this setting? By displacing objects found within the square, one can re-define an object's signification and thus the function transforms from mere scenery into staged prop. According to Barthes, "Every object in the world can pass from a closed, silent existence to an oral state, open to appropriation by society" (Barthes and Lavers, 1972, p. 109). If we understand that props carry with them a specific activity and hence agency, we could in effect manipulate the phenomena occurring in the space. By changing the identity of the square, we wanted to provoke a reaction by making use of people's inhibitions about foreign cultures. The concept was to project an exaggerated vision of the future, by installing an object that symbolically suggested an Islamic presence in the square. We wanted to be careful not to appropriate any religious artefacts or elements that might cause an offence, yet the course of conceptual development resulted in a design for an appropriation of the Kaaba cube in Mecca. For this intervention we designed and built a 4 x 4 meter cube structure that enclosed the central tree of the square. To heighten the Islamic metaphor, we recorded a piece of original music that resembled the Muezzin call to prayer in auditory style, yet with the lyrics, "fürchte dich nicht" (German for: No need to be afraid). By using a megaphone to project the music, the song resounded through the neighbouring streets and attracted a significant amount of attention from residents and daily users of the public square. In order to make the space more approachable, approximately 300 miniature black cubes were placed around the main structure. This created a buffer zone between the public square's perimeter and the centre. People were able to walk across the open space, yet still be captured by the installation. The interior of the cube was set-up with carpets, floor cushions and benches, so to create a relaxed atmosphere for discussion, in contrast to the provocative exterior. Passers-by were encouraged to overcome their fear of entering the cube, and invited to voice their impressions of the spatial intervention.

Members of POF were present inside, and were there to facilitate a discussion revolving around the display of fears collected from the previous action in Vienna. We chose to re-write a selection of fears as newspaper headlines and post them on the interior walls of the cube. This was to emphasise the role that the media plays in fear manipulation, and to negotiate whether we in general exaggerate our fears or if they are rational. The layout of the newspaper alludes to one of Austrian's most known tabloid newspapers. Additionally a public announcement was made through the megaphone whenever a new fear was contributed to the collection. The crucial element of this action was again to break down inhibitions and crack open the mental space of fear, to discover if and where there may be manipulation occurring. Our hypothesis is that people are "blind" to events that they can only get an impression of through the means of media. From what they see or hear, they can choose which narrative or version of truth they wish to believe, and hence, which reality they wish to construct for themselves. In contrast to the action at TBA21, where the act of listening was exercised as a means to collect information from our participants, the planned action in Linz will turn this around in order to test how the participants' movements can be affected by what they hear; by what they choose to listen to. Over the course of two days in Linz, the mounting collection of fears meant that more and more discussions were opening a fresh and current dialogue on the notions of fear in public space.

3.4.1. Differentiating rational and irrational fear

The artistic research process presented by Draper (2013) uses the metaphor of an elephant described from different perspectives of blind men (referring to the print Blind monks examining an elephant, by Hanabusa Itcho (1652 –1724). Each individual brings forth a different description of the elephant relating to where and how they interact with it. By summarizing each description they were able to design an image of an object they could not see or fully experience individually. The metaphor teaches us how biases can blind our collective understanding of a subject, due to the diversity of individual interpretations. While bias can potentially produce a rich and complex design of an object, it can also hinder our desire to seek a common understanding of the nature of things. As discussed earlier, fear entrepreneurs can have many motivations for shaping our impressions of things and constructing a state of irrational fear. Our way of understanding an object in public space or an issue in society is fed by descriptions from blind men, we have to discover our own blind spots. It is our relation to the space - our mutual presence in a place - that presents a signification and a consequential meaning. Where our impressions are affected by descriptions that inherently contain within them a void of information, a miscommunication, or lack of a certain spoken language, there arises a state of implicit doubt. What occurs is exactly how Barthes describes the notion of tautology, "when one is at a loss for an explanation: the accidental failure of language is magically identified with what one decides is a natural resistance of the object" (Barthes and Lavers, 1972 p.152). Language in its deficiency distorts the impression. Dealing with "fear entrepreneurs" and their public relations, may be considered as influence on the public space: the impression of which can be manipulated and transfigured to accord of "fear entrepreneurs". POF Collective are investigating how fear entrepreneurs construct a false reality (of course, not in the sense of an opposition to 'true' reality, rather as one composed of individual impressions), based on the messages they send through their discourse and the meanings that can be identified with. Therefore meaning has to be constructed before any message can be delivered. Barthes has told us that "[a message] is by no means confined to oral speech. Any material can arbitrarily be endowed with meaning" (Barthes and Lavers, 1972 p. 110), and that whatever form the messages take, it will then become mutated form, situated in a "false nature".



Figure 3. Chamber of Fear, Linz action at afo, photo © Milly Reid, Sebastian Kraner

4. Conclusions

The POF collective is both a think-tank on strategies to negotiate feelings of fear and an executor of participatory interventions in public space. Due to the instrumentalisation of fears and the societal threat through the rise of right-wing populist parties in Europe, this is a highly urgent topic. At the intervention in Vienna at the TBA21, it was possible to create a comfortable atmosphere to engage in conversation with the people passing by due to a large team of POF members. The design, including a fence installation with a picnic table and experimentation with materials, helped the team to discuss the topic of fear while remaining objective and restrain from judgement. This was necessary in dealing with an issue as sensitive and personal as fear. Our use of LAR methodology at the intervention in Vienna meant creating an interactive mode of dialogue. Going a step beyond verbal dialogue, we found that visualising the conversation stimulated the discussion further; therefore becoming increasingly inclusive to a wide range of participants. This act of listening was exercised as a means to collect and record contributions from the participants, yet also to provide a material that could feed the next development in the project. We collected a wide range of responded fears and hopes. It indicates that the fence installation that was part of the design did trigger the association with the issue of concern, security in public space and migration, in some of the respondents very consciously.

"Consciousness is the passage, or rather the awareness of the passage from these less potent totalities to the more potent ones, and vice versa" (Deleuze 1988, p. 21). Following the thought of this quote, the relation of fences and borders with fears might trigger a more conscious examination later on and hopefully, interfere with the undertakings of fear entrepreneurs. It was substantial to consider fears in their dialectical relation to hopes. According to Spinoza, "There can be no hope without fear, and no fear without hope." The description of hopes sometimes expressed fears, such as e.g.: I hope that not too many things are changing. In Linz we focused on creating a spatial manipulation that symbolised a shift in cultural identities in order to test how local inhabitants of Linz would react to the scene. We were interested in how they would choose to respond based on what they could see and listen to from the "outside". In other words, how the manipulation of a space can affect one's perception and emotional reaction to a place. POF collective now holds a substantial library of material that ranges from written hopes and fears for the future, newspaper headlines that reveal in themselves the emotional state that fear possesses on an individual, to sound recordings of in-depth discussions over which country state will stop which ethnic physiognomy at border controls. This vast range of outcomes may not prove a scientific hypothesis, but it does contribute to the overall project of re-negotiating fear, and how fear of the "other" contributes significantly to our individual perceptions of security and safety in public spaces. So far, the questions posed at the beginning of this research project can be only partially answered, since outcomes of the interventions could not be sufficiently measured. As we discovered, the act of listening opens up a significant amount of space for personal expressions that seemed to have no place within public discourse beforehand. For example, one of the participants at first claimed that there is no point in taking part of a discussion, since the political discourse to her seems to exclude the public and there is currently no space for individual expressions of concerns. When she understood the installation as a safe space for exchange, she at once opened up and contributed three well-nuanced thoughts that led to a broader discussion with other participants as well as the collective.

Furthermore, the nature of the exhibited fears created a base for a long-term, silent dialogue. The manifested thoughts, written down and exposed, provoked reactions and enabled an exchange of opinions that in other circumstances seemed unlikely to be realised. As such, new points of contact could be founded, and new points of departure of the project were established. Further artistic interventions in public space are planned. POF intends to develop new strategies to stimulate and engage in different kinds of interactions. All action is going to be photographed and videotaped.

What participants make or made of the engagement activity and interventions has to be evaluated in further actions.

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To type or drag and drop: Engaging the creative arts through visual programming languages

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ABSTRACT

This paper explores and compares two computer coding paradigms: text-based and visual-based programming languages for creating Internet-enabled devices. This paper also questions how visual- and/or text-based programming can be used as creative support tools to enable disciplines other than IT to create and innovate in a world of ubiquitous computing.

The foundation of this investigation is the development of an Internet of Things artwork. The development of this sculpture includes the exploration of physical computing using two different programming methods: (1) the text-based programming language, Arduino, and (2) the visual language of Node-Red, a program commonly used with the Raspberry Pi 2. Both coding platforms are open source and freely accessible with the support of considerable code repositories and a user community of online forums. The accessibility of software is critical as this study forms part of a larger investigation into open source design and innovation.

The observations reveal that the visual-based program, Node-Red, permits a certain level of creative engagement. However, this engagement is limited. The study revealed interesting insights into the distinctions between visual- and text-based coding programs. It is evident that further research is needed to define the differences between various programming paradigms.

keywords

visual language, open technology, creative support tool.

INTRODUCTION

Every new device seems to have some form of computer processor embedded within it. Consumer products such as activity trackers, smartphones, and weather stations are constantly pushing data to the Cloud. Open technology devices such as Arduino and Raspberry Pi microprocessors are connecting the digital and physical worlds. This technology requires programming, or coding, providing the necessary instructions to the device to perform the desired task. The challenge, however, is enabling those with little to no coding experience to create new and interesting technological artefacts and experiences, using these open technology devices.

This paper questions how visual-based programming can be used as a creative support tool and a platform of expression, enabling a broader cohort of disciplines to create and innovate in a world of ubiquitous computing. This initial exploration discusses the visual-based programming language, Node-Red, and compares it to the text-based coding language of the Arduino microcontroller. The foundations of this investigation are focused upon the development of an Internet of Things artwork, named Temptouch. This artwork is designed to prompt the viewer to consider how we interact with open data and alternative ways that this information can be represented. The development of this artwork helps question, through praxis, whether the graphic programming environment is more accessible for the non-coder and at what level of engagement.

Visual versus Text

Traditionally, computer programming languages, such as C and Python, are text-based languages that use specific and often unique syntax and grammar. For a linguistic translation to occur between human and machine, a number of sequential steps are required to enable "interpretation and execution by the computer" (Shu, 1999, p. 199). To achieve a resolution, the problem must be communicated to the computer using the appropriate language. Like all languages, practice is required for fluency and comprehension, and to some, the required learning style may not be compatible with their own.

An alternative to text-based programming languages is visual programming. Broadly speaking, visual-based programming is a system that allows the user to construct a program via icons, in a two-dimensional framework (Myers, 1990, p. 98). Through this graphical process, icons are used to represent blocks of code. The user then links the blocks together to form a complete program for the computer to execute. The use of icons helps

to alleviate syntax and grammatical problems within text-based language, whereby leaving a comma or colon from a line of code could render the program unusable. Furthermore, the use of icons can graphically connote meaning within its form; colour and shape, therefore, facilitate—and to some degree dictatate—how the blocks fit together.

Scratch is a common example of a visual programming environment, widely used by younger people. Developed by MIT Media Lab's Lifelong Kindergarten group, it is a programming language created for non-programmers. This type of programming is often referred to as an educational aid—an introduction to the computer sciences, preparing future programmers for the transition to text-based coding (Armoni, Meerbaum-Salant & Ben-Ari 2015, p. 25). Resnick et al, debate this and assert that Scratch can be the "next step", where programming is a tool for expression and experimentation (Resnick et al. 2009, p. 66). This divide in discourse highlights the questions that surround the level of sophistication attainable by visual languages, with some believing that it is limited (Armoni et al., 2015). However, the concern for the non-coder at this point is less about elegance of the code and more about how they can access and acquire the necessary skills to create novel artefacts.

Open Technology

Open technology and the open source ideology are playing substantial roles in creating new avenues for expression and experimentation. "Open source," a term coined by the software industry, is a philosophy of sharing. Coders collaborate on projects, combining different individualistic knowledge and skill sets (Raymond 2001). Many open software repositories (software libraries) are distributed throughout the Internet, where coders contribute ideas, appropriate other people's ideas, and reuse ideas for a similar and/or alternative purpose.

The Arduino microcontroller and the Raspberry Pi small computer, are popular examples of open technology. These open hardware devices reside within a similar framework to open source software. The Arduino microcontroller and its coding language have proven to be a critical foundation of many open 3D printing systems (Roberts 2016, p. 143). The RepRap, an open source 3D printer project, has fashioned a pathway to dramatically increase the design and development of commercial 3D printers (De Jong and De Bruijn 2013, p. 45).

Open technology microprocessors are computers; they require programming or instructions to enable them to perform tasks. However, just as the open ideology in which they reside, accessibility of these devices should be addressed. Visual programming can allow for this interaction and can create avenues for expression through technologies traditionally used by people with text-based coding skills.

Temptouch

As mentioned, the foundation of this investigation is the development of an artwork named Temptouch (figure 1). This device is situated within the Internet of Things paradigm and is designed to consider the use of open data. Temptouch allows audience members to feel the current temperature of their desired geographical locations via a touch plate.

Temptouch was developed by the author, who is neither a computer coder nor an electronic technician. Temptouch is a system of electronic components and software integration. All information that was required to create this artefact was obtained using the open source ideology. On completion of this project, all information and documentation will be uploaded to an online repository for others to replicate, modify, and adapt.

The project was initially developed using the Arduino microcontroller and coding language. However, within the preliminary stages, the project exposed significant complexity, which required an exploration of different microcontrollers and coding environments. Temptouch was finally created using the Raspberry Pi 2 small computer and the Node-Red graphics programming language. Node-Red, developed by IBM for creation of Internet of Things devices, is a generic software programming environment on the Raspberry Pi Raspbian Jessie operating system.

This paper reflects the development of the art work, Temptouch, and explores the different coding types: (a) TCL (Texted Coding Language) Arduino microcontroller, and (b) VPL (Visual Programming Language) Raspberry Pi small computer.



Figure 1. Temptouch with hand, image.

Comparison

In observing and programming within the two environments—TCL and VPL —the obvious difference is with the aesthetic and semiotic values of each interface (figure 2). Arduino TCL relies on a linear approach, with lines of code sprawling across and down the screen. A particular piece of code —used within this project—is approximately two hundred lines long. The author of the appropriated code places commenting, in plain English, to help people navigate the code and decipher the intention. However, it is still easy to become confused. This is typical within TCL, as the code is represented linearly. However, the code does not flow sequentially; rather, it jumps around between segments of the code.

Alternatively, Node-Red VPL relies on graphical icons to signify the program's fundamental working sections. The visual environment links icons together to represent the entire program, forming a system similar in appearance to a project or mind map. The icons depict form and colour, demonstrating their behavior within the process of the program. Points on the left-hand side of the icon represent inputs—messages to the node—and single or multiple points on the right-hand side represent outputs—messages that leave the node. Clicking and selecting the icon causes it to expand to reveal a menu system for the programmer to manipulate the icon's parameters.



Figure 2. Arduino IDE compared to Node-Red

Arduino IDE (Integrated Development Environment) TCL	**Raspberry Pi - Node-Red VPL**
Arduino IDE is typically a text-based programming language. There are also visual languages for the Arduino microprocessor, which include Visuino and Ardublock.	Node-Red is a flow-based visual language. A toolbox or library of icons are displayed alongside a user interface. Alternatively, function nodes that are not represented can be created through a text-based interface.
The Arduino coding environment occurs on an external development computer, and code is uploaded to the microcontroller via USB.	Node-Red runs within the operating system. The programming environment occurs through a web browser. The coding environment and microprocessor are together.
Installation is simple—as with standard computer peripheral devices. The library installations are done through the GUI interface.	Installation can be complicated, but Node-Red is now becoming a standard software embedded within some Raspberry Pi operating systems. Using a command line is necessary to install new libraries and flows (programs).
Debugging requires the user to add commands within the code to identify errors. Typically, these commands are used to send data to the screen of the development computer.	Node-Red has built in Debug Nodes, which can be placed anywhere throughout the flow to identify errors and node output messages. Nodes can have signals (indicators) to display function.
Open source. The community is vast with lots of example programs online. However, it can be hard to find the right example.	Open source. The community is not as large as the Arduino, but seems to be growing rapidly.
Program updates can be relatively slow. The IDE needs to compile and upload the program to the board before it goes into effect.	Node-Red updates quickly—under a second in most cases. Allows for a quick turn around with experimentation.
Works from a text screen through the IDE.Examples of code can be accessed in the drop-down menus Example code can be copied and pasted from various websites and repositories.	Node-Red is a blank canvas. Programmer drag-and-drops icons from the virtual toolbox positioned on the side of the window. Further flows (code) can be copied and pasted from various websites and repositories.

Table 1: Comparison of Arduino TCL and Node-Red VPL

Discussion

When first exploring visual languages for this project, I was of the belief that the scope was limited, especially within the programming of microcontrollers. However, there has been a development around visual programming languages for decades. The site, Interface Vision, lists over 150 different types of visual languages on its comprehensive, though outdated, blog post. The visual programing environment stretches as far back as Grail (GRAphical Input Language) developed circa 1960, to Scratch, which is now extensively used throughout schools today.

Within the design industry, a transition from text to visual has occurred. The early implementation of Computer Aided Design, or CAD, was a text-based interface. My first experience with drafting on a computer was AutoCAD, which required me to type instructions through a command line. Now, nearly all CAD interfaces rely on a toolbox of icons. This toolbox methodology is how Node-Red (as with most VPLs) facilitate programming and user interaction. However, in the early stages of CAD, there were limited tools, which could inherently dictate how we designed. A limited toolset can hinder the ceiling of expansion within creativity.

This virtual library does, however, allow an avenue of exploration. My previous experience with Internet of Things communication protocol was basically nonexistent. Node-Red enabled me to understand unfamiliar terminology, creating a starting position from which I could search and learn how to use these functions. This also created a follow-on within my text-based coding skills, assisting me to better understand how to use these protocols within the TCL of the Arduino platform.

Within the open source paradigm, it is common to reuse other people's code. Merging many different pieces of code helps to innovate and create novel ideas. Eric Raymond's second rule for open source software development states this clearly: "Good programmers know what to write. Great ones know what to rewrite and reuse" (Raymond, 2001). However, it requires a certain level of coding skill to enable the aggregated code to work. But, generally speaking, Node-Red is designed to facilitate this very thing. When creating a new node, the authors need to abide by a particular set of rules, in order for that node to work within the greater system.

Just as the 3D printer has allowed us to create from the virtual world of CAD, graphic artists can express their ideas on the screen and print in high resolution with bubble jet printers. Open technologies are now widely accessible; more attention should be focused on our ability to express ourselves through these devices. These open devices have helped elevate the complexity of experimental electronics. Furthermore, with the advancements in visual languages, open devices help us to broaden the outputs of creative artists and designers.

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Written world. A platform for collective research and creation of signs for public places

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ABSTRACT

Vernacular signs are a valuable aspect of cultural heritage, an essential element in the definition and expression of the identity of a place, and a key factor in its legibility and liveability.

This paper proposes an internet platform as a useful tool for the collective cataloguing and valorisation of this endangered heritage, with the aim of better celebrating, promoting, and preserving its diversity. This platform would not only include an open database of the best signs from everywhere in the world, but would also be a shared space for experimentation on new meanings, forms, and materials for future signs.

The Cumulus conference, Open Design for E-very-thing, in Hong Kong, is a great context to share past experiences and fresh ideas with other members of the association, who might be interested in joining the project in different cities worldwide. This would also provide the possibility of meeting individuals and groups, from Hong Kong and elsewhere, that are already working on similar initiatives. The objective during the conference is to create a small group to work on the prototype for the platform and to then apply it as a trial in a few locations.

This platform, which, in this paper, will be referred to as Written World (WW), would be a laboratory for debate and reflection that would open up interesting new perspectives on the protection of the graphic heritage, as well as the processes of research, education, and creation of alternative forms of communication in public spaces.

keywords

signs, heritage, vernacular

INTRODUCTION

‘‘One of the things I try to show my students is that historical grounding does not exclude being contemporary. The future is not the opposite of the past. I try to get my students to imagine this practice as having roots that go deep and wide into the ground, to be able to build something substantial and durable. Because otherwise it’ll blow away in the wind.” (Tobias Frere-Jones, in Kim, 2014, p.145)

Vernacular signage evokes a sense of place and sustains collective memory, however, it is vanishing everywhere and being substituted by global logos and standardised plastic signs. Traditional and distinctive styles, crafts, materials, and techniques, as well as the traces of local history, are disappearing with these old signs (Gónzalez Riaza, 2011).

This paper proposes a platform, managed by Cumulus members, as a tool for the collective gathering of information on vernacular signs in public spaces from all around the world and a comprehensive cataloguing of those considered as cultural heritage, with the aim of preserve their richness and diversity. There would also be activities for the promotion of the content of the database, as well as the research and creation based on it.

Antecedents

This proposal for a platform is based on the study led by the author for their PHD thesis, as well as on the experience of the many projects and fieldwork designed and conducted by her between 2003 and 2015.

Several of these projects had an interactive site on the Internet as a key element and they were developed with contributions from many users. Signs in public spaces constitute an object of study of such magnitude that to address it collectively was considered, from the beginning, as the best way to go.

The first project was Written Europe (WE) a three-year-long collective research project on European graphic heritage and vernacular signs, supported by the Socrates programme of the European Union and conducted between 2003 and 2006.

The partners were four design schools in Amsterdam, Madrid, Prague, and Riga: the Escuela de Arte Número Diez de Madrid, coordinator of the project; the Grafisch Lyceum Amsterdam; Stredni Prumyslove Skoly Graficke of Prague; and the Amatniecibas Vidusskola, from Riga.

A key to the success of this project was its open collaborative website, www.written-europe.org, managed and accessed directly by users at different levels. It was designed to facilitate the participation of all students and teaching staff from four schools in different countries, over three years, each one managing their part of the project, exchanging information and ideas through the web (Figure 1), in a dynamic process of collective research, evaluation, and creation (Gónzalez Riaza, 2010).



Figure 1. Gallery of projects - Written Europe website

The WE website showed the evolution of the project and its results. It had 62,500 visits over three years and many more afterwards, until it was closed. There were 2,500 registered users who shared their work there. It was a pioneering platform, in many ways, and it was one of the reasons why the project was selected as Success Story, to be published and presented in Berlin during the launch of the Lifelong Learning Project of the European Union, in May 2007.

Many people and groups from outside academia showed interest in the project, which lead to the design of another project, open to the participation of everyone: www.ciudad-escrita-org

Ciudad escrita was launched as an open platform with a database and other tools to collect and share information and to promote the creation of better signs for public spaces (Gónzalez Riaza, 2004, 2006a y 2006b). It included activities for the valorisation of signs, such as Cañas tipográficas (Figure 2), a virtual and a physical walk around old bars, tabernas, and other old establishments with good vernacular signs, that was designed for the closing ceremony of the II International Typography Congress in Madrid (Gamonal Arroyo, 2011).

Besides Written Europe and Ciudad Escrita, the author has designed and coordinated other national and international projects related to signs, public spaces and cultural heritage, such as Breda ciudad escrita, for the city of Breda, with the St. Joost Academy, and Written Lavapies, for an old neighbourhood in Madrid. Both projects used a methodology of research and design with several stages: photographic safari, classification of signs into several categories (local/specific, non-local, global, common), diagnosis, and, finally, a proposal of intervention.

In La universidad escrita, a new typeface was designed from the remaining original Art Deco letterforms in the Faculty of Philology of the Complutense University in Madrid. The aim was to preserve and enhance the university´s visual identity.

In Written Madrid, new typefaces from Madrid's old storefront signage were designed with the direction of the author and the participation of the Dutch typographer Martin Majoor, alongside other Spanish typographers and designers.

Over two years, the Escuela Superior de Diseño de Madrid



Figure 2. Cañas tipográficas, a typographic walk in Madrid.

contributed to the initiative of the Rijksmuseum, Rijkstudio: Make your own Masterpiece, encouraging creation and design using the contents of this new open platform. The projects Written Madrid, Written Breda and Rijkstudio had the support of the Dutch Embassy in Madrid.

Design as Ethno-Tourism, a Collective and Multidisciplinary Design Project on Madrid Public Spaces

Design as Ethno-tourism was an Erasmus Intensive Project, coordinated by the author in Escuela Superior de Diseño de Madrid, in 2012-2013. The other partners were: Chelsea College of Art and Design, from the University of the Arts London; Luca School of Art, from Brussels; the Fine Arts Faculty, from the Complutense University of Madrid; the Fine Arts Faculty, from the University of Oporto; and the Faculty of Architecture, from the Technical University of Crete.

More than 70 students and lecturers from different disciplines met in Madrid for two weeks to study its public spaces and to design for them, together with many collaborators from the city, such as DIMAD, Madrid Designers Association; Intermediae, Space for Contemporary Creation; COAM, the College of Architects; Madrid City Council; and many other local individuals and groups, some from the Red de Arquitecturas Colectivas, such as Basurama or Red de Huertos Urbanos. The local collaborators helped in many ways, including lending their work and exhibition spaces, showing participants around the city, and coming to present their work to the students and then giving feedback on their insights and proposals. In this sense, it was a trial run for the collaboration between different stakeholders and the local support system that this paper proposes as a key factor for making change possible.

A vital part of this project was coming to understand and consider the views of local people and the city as a whole. During the first stage of the project, a method of urban ethnography was used, in which, through fieldwork, interviews, direct observation, notes, travel journals, photographs, videos, mind maps, creative writing, and other tools, participants identified keys in the configuration of a neighbourhood or the city, as well as the behaviour of the natives, seen through the eyes of a newcomer.

The data collected was subjected to further collective critical interpretation. Finally, multidisciplinary teams developed general, and respectful, recommendations and specific design proposals for each of the chosen sites. Many interesting new insights and ideas arose during these days of very intense work together, as illustrated in Figure 3.



Figures. A part of the previous research and one of the proposals for Design as Ethnotourism

A key to this project's success was the possibility of including the views of designers coming to the city from other places, for whom it was much easier to appreciate what was really specific and unique to Madrid, and who were then able to propose ideas and solutions based on the experience of their life elsewhere.

Besides organising similar events in the Written World project, with various partners working physically in the same place, a shared Internet platform could also be a virtual meeting plaza for sharing different views on vernacular signs and, thus, a multiplier of ideas and resources.

The Written World Proposal

Educational institutions have the duty to raise awareness of the richness and diversity of the cultural heritage, and this includes objects of design and craftsmanship. Cumulus is an ideal arena to discuss this and to find ways of working together on the inventory of this heritage. This initiative proposes to start this inventory with vernacular signage from all around the world, using a platform that will include:

1) Space for record and inventory: the database structure and fields have been designed to comply with the main international standards, tools, and recommended list of categories for cultural heritage, as well as the necessary specific categories for signs. There is already a complete proposal to be reviewed and adapted by the WW team.

2) Space for research, study, and promotion of the database contents: through the platform, activities that allow collective analysis and enhancement of the compiled material would be organised, such as walking, bike, bus or virtual sign tours, like Cañas Tipográficas (Figure 4); interactive games; apps and educational tools; collective voting and reviews; research projects and comparative studies; and think-tanks. Cumulus conferences could be great opportunities for exhibitions, intensive workshops, or photographic safaris.

3) Space of creation: new and better signs would be designed from the material collected in the database, learning from vernacular signage, like the typefaces that resulted from the Written Madrid project (Figure 5).

Written World could have Laboratories for experimental projects on new communication needs, for example, sustainability, poetry, or the specific needs of a community, such as children or disabled people. It could also help to set new guidelines and recommendations for the design of new signs and to identify, promote, and award the best practices of visual communication in public spaces.

The platform will be open to everyone but with different user profiles. Schools of design from all around the world could be the managers and core contributors to the project and Cumulus could be the perfect context to start developing it.

There are many interesting websites showing signs from many places in the world, often using existing tools like Flickr or Pinterest (Frere-Jones, 2014). Written World could use these similar tools in some stages, however, one of the key aspects of the project is that the information contained in its database will be selected and authenticated by experts from each partner design school or university, who would be responsible for the quality of the content they share.

Local Support System

Along with the proposal for the platform, other elements for a wider management system will be recommended by ***Written World***. Through the community of design schools and universities as coordinators it could be possible to engage many other users in each city and country. Even though education is the basis of this project, in order to make the necessary changes in the streets possible, it would be necessary to develop a local network of different stakeholders, such as local government, associations, specialists in heritage and urban landscape, designers, typographers, art historians, computer engineers, and other professionals, citizens, and visitors. In Madrid, the project Ciudad escrita was presented in the inauguration of the new headquarters of dimad, the Madrid Designers Association, the new Central de Diseño in Matadero Madrid (Figure 6).



Figure 4. Images of the typographic walk Cañas tipográficas, in Madrid

The partner schools and universities could help local responsible entities to establish categories of protection and conservation policies for graphic heritage, as well as advising on the relevant signs in each place and as part of conservation and restoration projects. They could also help to collect physical signs and collaborate with a possible Museum of Signs, or similar, in each location, when possible. In some cities there are already museums of signs, like the Buchstaben Museum, in Berlin or Neon Boneyard, in Las Vegas, but collecting the best signs should start as soon as possible, even in the absence of a museum. Suitable alternative spaces could be found, such as inside a university or school of design. There are precedents, such as in Central Saint Martin's Design School, in London, where there is a large collection of signs collected from the streets of the city or The Montréal Signs Project, where signs rescued or donated by the owner are exhibited in different exhibition spaces within a university campus.



Figure 5. La Moderna, one of the open Written Madrid fonts, freely distributed on Neo2 magazine website (Jorge Hernández, 2012).

Education and Research: Environmental Graphic Design

Interest in Environmental Graphic Design is growing worldwide. In recent years, there has been an increase in books written on the subject, events organised, as well as a growing number of lines of research, courses, and undergraduate and graduate programs on the subject. The platform we propose could have a very important educational role and, from it, quality training in this field of design would be encouraged.



Figure 6. Ciudad escrita, in Central de Diseño, Matadero Madrid

Written World would address the issue of the protection of diversity but also other important subjects related to the meaning and shape of communication in the public spaces. *"The city is in itself a powerful symbol of a complex society"* (Lynch, 1960, p.5). Involved schools could promote and coordinate theses, final projects, and other research and innovation projects. Debate and experimentation, which should be an essential factor in design education, are needed to answer questions like these: How can communication be used in public spaces to improve people's lives? What are the most appropriate styles, materials, and techniques for each place? What kind of messages are allowed and which ones are silenced? Could signs help in understanding the spatial and temporal dimension of a city, telling its history, intensifying the experience and celebration of the shared present, anticipating the future, and facilitating necessary changes?: "It is when local time, local place, and our own selves are secure that we are ready to face challenge, complexity, vast space, and the enormous future" (1971, p.89)

Conclusion

This paper is an invitation for Cumulus members to join the WW Written World project. It proposes using a shared internet platform for the collective compilation of an inventory of the best vernacular signs worldwide, the promotion of the appreciation and understanding of their value and the creation of better new signs for public places.

The model for Written World is the result of the research conducted by the author on heritage management and projects on vernacular signs, as well as further experience and fieldwork related to these subjects. The structure proposed in this model, has been applied to previous projects and tested already. In WW, it would be adapted and tested again, together with partner schools and key stakeholders in their cities.

Written World could be a prototype for similar initiatives in other areas of design within the framework of Cumulus. There is enormous potential in a tool that would allow members of the association to work together online on subjects of common interest between conferences, and could enable unprecedented forms of engagement. It would be possible to use this common platform to share information, insights and innovative proposals, as well as vernacular, solutions from all around the world.

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Democratising design in scientific innovation: application of an open value network to open source hardware design

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ABSTRACT

Open source hardware (OSH) development has been gaining momentum in recent years with several communities attempting to formalise its various aspects. One particularly promising area is the design of open source scientific hardware. Previous work has shown that the use of digital fabrication techniques has allowed scientists to make high-quality scientific tools for 1-10% of the cost of commercial proprietary equipment. Open source scientific hardware (and the open science movement in which it is situated) is part of a larger social shift characterised by open production methodologies, and decentralised and distributed models of collaboration. Design is also increasingly involved in supporting open production, both in terms of designing and developing technical infrastructures, and in terms of encouraging and sustaining processes that promote collaboration and openness.

This paper builds on the work of open source scientific hardware and emerging concepts in participatory design with a focus on commons-based peer production. How do open production environments foster engagement and innovation? Can distributed modes of production support the design of open source scientific hardware? To answer these questions, a design research case study was undertaken to investigate the design and social impact of a collaboratively designed open source hardware instrument developed by Sensorica, an open value network, in collaboration with an academic laboratory. The project's goal was to engage with makers and communities around the world in order to encourage its wider adoption, future evolution and continued development.

Keywords
open source hardware, commons-based peer production, participatory design

INTRODUCTION

The democratisation of digital technologies and proliferation of open source software (Corsín Jiménez, 2014; Marttila & Botero, 2013) has provided individuals and groups with unparalleled access to design and production tools. Following the success of free and open source software (FOSS), the production of open source hardware (OSH) has been gaining momentum (OSHWA, 2016b; Seravalli, 2012, 2013) in recent years with several communities attempting to formalise its various aspects. These include Peer-to-Peer (P2P) communities supporting OSH production environments through distributed communication networks (Bauwens, 2009; Benkler, 2006); communities investigating licensing issues, such as the Open Hardware License (OHL); and Engineering and Design communities creating participatory platforms that promote access to, and sharing of, hardware designs and code (Corsín Jiménez, 2014).

One particularly promising area is the design of open source scientific hardware (Pearce, 2012; 2014). Open source scientific hardware, and the 'open science' (Dasgupta & David, 1994) movement in which it is situated, is part of a larger social shift characterised by open production methodologies and new, decentralised models of collaboration – or commons-based peer production (Benkler, 2006; Bauwens, 2009). From data acquisition and analysis, to the open production of tangible instruments, open science has grown into a coherent set of interconnected processes, defining a new approach to scientific inquiry and technological development (Brastaviceanu, 2016). In addition to lowering costs, scientific innovation benefits from more networked, open, and collaborative environments (Baldwin & Hippel, 2011; Chesbrough, 2003).

Design is also increasingly involved in supporting open production, both in terms of designing and developing technical infrastructures, and in terms of facilitating and nourishing processes that promote collaboration and openness in diverse fields

(Seravalli, 2013). From the 'open design' movement (e.g. Halpern et al., 2013; Marttila & Botero, 2013; Phillips & Baurley, 2007; Phillips et al., 2014; van Abel et al., 2011) to collaborative practices in community contexts (e.g. Björgvinsson et al., 2010; Björgvinsson et al., 2012; Hillgren et al, 2011; Karasti & Syrjänen, 2004; Le Dantec & DiSalvo, 2013), an increasing number of participatory design scholars are shifting focus from a product design view toward socialised and long-term processes in open and public environments.

This paper builds on the work of open source scientific hardware (OSSH) and emerging concepts in participatory design (e.g. Björgvinsson, 2014; Marttila et al., 2014; Marttila & Botero, 2013; Seravalli, 2012, 2013) with a focus on commons-based peer production. How do open production environments foster engagement and innovation? Can open products be designed, produced and distributed in a sustainable way? How can decentralised modes of production support the design of OSSH? To answer these questions, the development of a collaboratively designed OSH project by Sensorica, an open value network (OVN) based on principles of commons-based peer production (Bauwens, 2009), and an academic laboratory will be presented. The challenges of this approach and lessons learned will also be discussed.

Literature review

An increasing number of scholars are commenting on the production of open source hardware and tangible products - from social science perspectives (e.g. Corsín Jiménez, 2014), to processes (e.g. Raasch, 2011; Raasch et al., 2009) and principles (e.g. Coleman et al., 2014) of open design, to the production and practical application of open source devices (e.g. Gibb, 2014). Others have approached the production of open source hardware philosophically, from a commons-based peer-to-peer perspective (e.g. Bollier, 2009; Benkler, 2006; Benkler & Nissenbaum, 2006; Hess & Ostrom, 2006, 2007; Siefkes, 2012).

Located at the interstices of open source hardware, open science and the knowledge commons, an emerging research area is the production of open source scientific instruments. Proponents of open source scientific hardware have cited an increase in return on investment (ROI) and access to low-cost devices as long-term benefits of applying open production processes to the design and development of these instruments. For example, previous work has shown that the use of digital fabrication techniques (e.g. 3-D printing and laser cutting) have allowed scientists to make (and replicate) high-quality scientific tools for 1-10% of the cost of commercial proprietary equipment (e.g. Pearce, 2012, 2014; Zhang et al., 2013; Baden, et al., 2014; Schausberger, et al., 2015; Mista et al., 2016). This approach has the potential to create tremendous value for the scientific community (Pearce, 2015a), as it allows replication for approximately the cost of materials (Pearce, 2015b).

Although the number of peer-reviewed studies on the production of open source scientific hardware has increased over recent years, much of the research focuses on economic value and improved innovation due to customisation for specific experiments. However, an increasing number of scholars are also exploring the collaborative practices and environments in which open source scientific innovation takes place (e.g. Langlois & Garzarelli, 2008; Petzel et al., 2010; Ziaie, 2014). For example, Petzel et al. (2010) consider how the commons can support innovation in the production of scientific hardware, while Baldwin and Hippel (2011) expound on the turn from producer innovation to user innovation in open, collaborative environments.

A number of design researchers (e.g. Baek & Manzini, 2012; Björgvinsson, 2014; Le Dantec & Disalvo, 2013; Marttila & Botero, 2013; Marttila, 2014; Seravalli, 2012; 2013) are also focusing on the shift from producer to user innovation. In addition to interrogating aspects of authorship, ownership, access and distribution rights, these scholars place emphasis on the social processes of design, embracing more extensive interpretations of how design activities are carried out. This area of research focuses on 'infrastructuring' - an emerging concept in participatory design that represents a move from project-based design in professional settings toward open-ended, long-term processes in community contexts (Björgvinsson et al., 2010). This paper offers an interdisciplinary perspective on open source scientific hardware by applying the concept of infrastructuring to the production of an open source scientific instrument designed and developed within an open value network. Furthermore, it considers whether certain concepts of infrastructuring, such as open-ended and long-term processes, can be applied to the design of 'useful products' (Le Dantec & Disalvo, 2013) with fixed timelines.

Methodology

This study employs a design research case study approach to analyse the design and production of an open source solar scientific instrument – a photovoltaic (PV) characterisation apparatus –, within an open value network. This approach supports the methodological traditions of participatory design, by directly implicating researchers in the design project, and thus makes the results of the research more relevant to design practitioners (Ilpo et al., 2011).

The data sources in this study consist of a document review of the design and research process, correspondence between collaborators, source files of process documents and group discussions between the project's major contributors (email correspondence and a live, recorded group discussion) - some of whom are co-authors of this paper.

Design process

Project description

The project's goal, as outlined in a report by Meyer et al. (2015), was to engage with makers and communities around the world in order to maximise the social impact of the solar PV characterisation apparatus device (see Figure 1) as an open source scientific instrument, and to encourage its wider adoption, continuity, future evolution and continued development. The characteristics of the scientific instrument were designed and developed in accordance with open science values and principles:

- Open source – integration of open innovation standards, documenting and sharing all layers of design;
- Shareable – portable, user friendly, and rugged, with the potential to track activity and use history as a shared community asset;
- Modular – allowing individual components to be easily repaired, replaced, exchanged or upgraded; a perpetual product;
- Interoperable – utilisation of common design standards to ensure compatibility with other devices or systems;
- Social – engagement and collaboration between communities of designers and communities of use to best design for on the ground needs;
- Ethical, ecological and sustainable (Meyer et al., 2015).

The design and development of the device was planned over four phases: Design Characteristics, Design, Prototype, and Product; and involved digital fabrication techniques (3-D printing) for the device itself, as well as user interface design and front-end software development for controlling the device.

All documented aspects of the project (e.g. project documents, reports, bill of materials and process videos - see Figure 2) were made publically available. In addition, versions of the software code were stored on Github, a software repository. The device design and code were distributed through an Attribution-Share-Alike (CC:BY:SA) license, which allows anyone to remix, tweak, and build upon the work (even for commercial purposes), as long as credit is given to the original producers and new creations are licensed under identical terms (Creative Commons, 2016.).

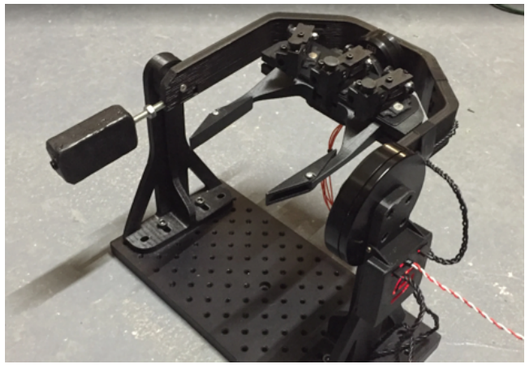


Figure 1. PV characterisation. Two-axis gimbal mounting system. Image source: Sensorica



Figure 2. Screen capture of video of demonstration of two-axis PV characterisation mounting system. Source: Sensorica

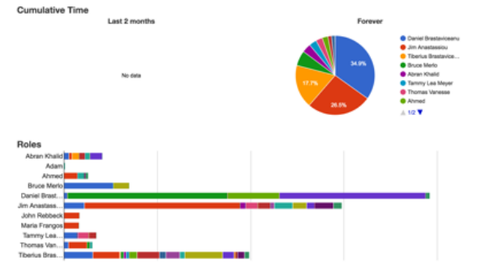


Figure 3. Top right: Visualisation of contributions. Bottom: Horizontal bar graph of contributions per user and segmented by tasks (colour codes correspond to task types). Image source: Sensorica

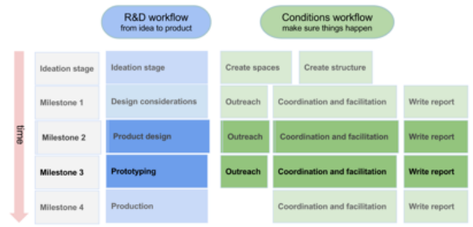


Figure 4. Workflow chart. Image source: Sensorica

Participation and collaboration in an open value network

A total of eleven people from five countries participated in the apparatus' design and development, logging over 200 time contributions (see Figure 3) in Sensorica's Network Resource Planning and Value Accounting System (NRP-VAS) – a web-based resource planner that distributes funds equitably amongst contributors, in proportion to their contributions. In addition, Sensorica created specific project roles for project lead, outreach, orientation, coordination and facilitation. Tools for collaboration included a hackpad (a collaborative platform), Google groups and Google Hangouts.

In addition to maximising the social impact of the device, the design of the solar PV characterisation apparatus also served as a pilot project in which to test the dynamic between an open value network and a classical institution (in this case, a university), using open production methodologies and Sensorica's approach to governance. Based on principles of co-production, self-organisation, and stewardship of the commons , the premise behind OVN is that it allows individuals and organisations to co-create and aggregate value through lateral and large-scale coordination, co-operation and collaboration. For the PV project, Sensorica created project governance, workflow (see Figure 4) and value equation agreement documents, and made them publically available.

Project Results

According to the academic partner, initial outreach was successful and a diverse group of Sensorica members, representing design,

[1] PV Characterisation - Prototype Demonstrated - https://www.youtube.com/watch?v=yBvEC9h71TU;
PV Characterisation - Mechanical Design - https://www.youtube.com/watch?v=bBvL9sou5MY
[2] PV Characterisation - Github Repository - https://github.com/Sensorica/PVCharacterization

communication, software development, and hardware development, participated in the ideation phase. As an open source project, the initial design concepts (see Figure 5 for one example) were well documented and provide a good starting point for anyone (including those outside of the Sensorica network) wishing to explore the concepts further. To this end, Sensorica's approach to ideation could benefit other projects seeking to develop a similar system. However, while Sensorica's open value network is designed to sustain open, collaborative and decentralised modes of production, this approach posed some challenges with respect to producing and delivering the apparatus. For example, while there was an explosion of creative design solutions (due to the diverse backgrounds of participating affiliates), this also created a significant amount of additional work to cull the core design down to a single concept.

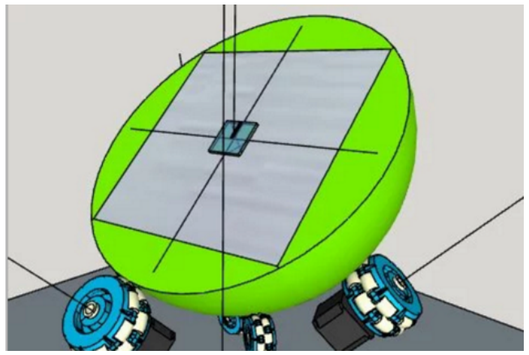


Figure 5. Spherical design concept. CAD by Daniel Brastaviceanu. Image Source: Sensorica

Creating outreach and sustaining community participation were also a challenge, as many of the initial participants dropped out of the project after the ideation phase (see Figure 6 for a graph visualising project engagement). These two factors added to the difficulty of fully documenting the finalised design. Finally, according to the academic partner, the largest challenge, and primary cause of the device delivery delay, was one of accountability. Anyone could participate in the project, but at the same time, anyone could also stop participating. This put pressure on Sensorica's support processes and resulted in some of the affiliates becoming overloaded with tasks, which, in turn, affected on-time delivery of the device.

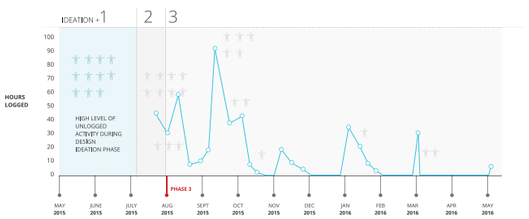


Figure 6. Participant engagement over time [5]

There were issues on the academic side as well. For example, payments to Sensorica took a long time to process. In addition, the distribution of grant funds to the academic partner was contingent on the timely completion of the agreed upon milestones. The project team's inability to meet deadlines diminished the amount of available funds for the research project, putting additional pressure on Sensorica affiliates who rushed to complete and ship the device. Another issue involved different perspectives with regards to Sensorica's role in the design and development of the device. For example, some individuals (at both the academic institution and Sensorica) characterised the academic laboratory's relationship with Sensorica as a classical supplier-client relationship, while others understood the relationship as a lateral collaboration between stakeholders. Finally, from an epistemological perspective, the academic partner and Sensorica held slightly different interpretations of the concept of 'value.' While project participants on both sides agreed that the project did create value, the extent to which it did was subject to debate. For example, Sensorica members felt that the project generated a great deal of social value. While the project lead on the academic side agreed with this assessment, he felt that the project did not generate the kind of economic value he was hoping for.

Discussion

Analysis revealed that there was tension between the approach used for realising the project's social goals and the reality of designing a 'useful system' (Le Dantec & Disalvo, 2013). Initial project documents show that the academic partner had specified both (socially) open and (temporally) fixed project requirements for the design of the open source instrument. The first was well-suited to Sensorica's way of working; however, the second posed a number of challenges from a practical perspective; namely, in applying principles of commons-based-peer-production to the design, development of an open source scientific instrument within an academic research setting, and a specified deadline for delivery. As mentioned earlier, these challenges were due, in part, to retaining a steady number of participants throughout the project. However, other challenges were the result of epistemological differences producing differently held priorities and project expectations.

The notion of temporal 'completeness' was also debated. For example, during the online discussion, one affiliate asserted that the scientific instrument should be viewed as a living, "open source artefact," whose future development and improvement would continue beyond Sensorica. A number of participatory design scholars (e.g. Björgvinsson et al., 2010, Björgvinsson et al., 2012; Ehn, 2008; Hillgren, 2011) have characterised the concept of temporality in design activities as a shift from product to process, or from specific project toward future possibilities. This type of approach is at odds with the way scientists typically undertake research projects, and, on a more practical level, with the way in which those projects are funded.

In terms of value creation, proponents of comons-based-peer-production privilege socialised aspects of the design and development process (such as enabling future development and remixing of the open source designs). Design researchers found that these open-ended processes afford innovation outcomes that would otherwise be difficult to achieve with a more structured project approach, revealing new opportunities and directions (e.g. Björgvinsson et al., 2010; Hillgren et al., 2011). However, in this particular case, the academic partner was concerned with short-term practical goals as determinants of value, such as limiting both production costs and time. Each of these project perspectives is typically served with a different approach to design.

Le Dantec and Disalvo (2013) have characterised the differences between these design approaches as 'design as infrastructuring' (or 'design-for-future-use'), and design of a practical or useful system, or 'design-for-use.' However, although these authors demonstrate that there are inherent differences between infrastructuring as a design approach (one that opens up possibilities toward future applications of a design), and design-for-use (an approach that "narrows possibilities through practical design moves") (Le Dantec & Disalvo, 2013, 257), they also argue that the two can complement one another. In the context of this study, there is an opportunity to reconcile socialised and open-ended processes taking place within an open value network with product oriented goals, by using an integrated design approach - one that address both future possibilities and current conditions. Recommendations for future development are discussed below.

Lessons Learned / Recommendations for Future Development

A number of project participants shared their recommendations for improving OSH production processes within an open value network. These can be classified in the following categories: workflow; participatory design and 'value'; and engagement. The goal is to expand upon these ideas, apply them to a future project, and evaluate them.

1) ***Workflow***

Stakeholders and participants had different ideas about how to prioritise project objectives (socially open versus temporally fixed production goals). Recommendations:

- Establish clear criteria for project objectives and expectations. What kind of project is it (e.g. a work in progress, a working prototype, a finished product)? What are the short-term deliverables and deadlines? What are the future applications and to what extent should these be addressed?
- Develop and implement project onboarding. Sensorica should work toward helping partner institutions / stakeholders understand OVN principles so that everyone involved has an understanding of the environment in which they will be participating.
- Create a central location for documentation and communication so that existing and new members can access project documents, email threads, decisions, etc.
- Create a dedicated budget for the position of 'project lead(s)' with a clear outline of responsibilities. Tasks could include ensuring that all project milestones and deliverables are met; verifying that all product build steps are well documented and easy to follow; and coordinating meetings and other activities with both the project team and partner institution. As this role is time intensive, a rotating project lead role is recommended.

2) ***Participatory Design and 'Value'***

A surge of engagement during phase 1 allowed Sensorica to innovate but not to 'complete' the project as expected. In short, product innovation did not result in the kind of value the academic partner was looking for. In order to improve project engagement, and manage expectations, the following recommendations could be implemented:

- Establish project outcomes with respect to a mutually held understanding of what 'value' means (by addressing both future possibilities and current needs) at the onset of each project.
- Implement lean design practices and tools for collaboration to meet short-term production goals. Just as network governance documents and project-specific value equations are the guiding principles of each project, establishing a set of design and production processes (that address product 'value') is critical.
- Create a budget for testing and product support for open source hardware products that are required to work 'out of the box.'
- Define how the project will evolve over time by addressing future work, dissemination of results, and next steps.

3) ***Engagement***

Over time, there was a loss of momentum and a drop in engagement. Participants in the discussion agreed that incentives alone were not enough and that some form of accountability must be developed to ensure on-time completion of tasks to which members of the project team had committed. Recommendations:

- Revisit governance and implement system of accountability. Sensorica has been talking about creating a reputation system for tracking commitments, however, this is currently a work in progress and requires careful thought and further discussion.
- Develop R&D processes for OVN with the goal of improving engagement, project commitment and 'ownership.'
- Develop tools that measure engagement (both qualitatively and quantitatively) in order to better understand engagement patterns.

While some of these recommendations are considered standard practice in classical institutions and professional settings, they provide a starting point for developing a more formalised design process to guide self-organised project teams in meeting short-term production goals within an open value network.

[3] The NRP-VAS was designed with Bob Haugen and Lynn Foster of Mikorizal Software, who did the development work in collaboration with Sensorica affiliates.
[4] Open value network - http://valuenetwork.referata.com/wiki/Main_Page

[5] There was considerable activity during the ideation phase in May and June, before the project had officially begun. As a result, the value equation for the project had not yet been entered into the accounting system. The visual representation of this activity on in Figure 6 was compiled by analysing electronic correspondence between project participants in May and June 2015.

Conclusion

Overall, the PV characterisation project provides a good example for enabling open source hardware design by an open value network. The varied and highly original designs were made possible by an open call for participation and address the social objectives of the project. While this brought valuable social and intellectual capital, a more streamlined mechanism is needed to better meet the short-term production needs of academically funded OSH projects. Once these systems are put into place and evaluated, Sensorica's approach to commons-based peer production can be scaled and applied to the development of other open source scientific hardware projects.

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Under the skin: Designing contemporary experiences in fashion display

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ABSTRACT

This paper positions Australian design group, the Stitchery Collective's practice in relation to current fashion debates through an examination of their two recent installations; Collective Collection (2014) and From Home, With Love (2015). The works of The Stitchery Collective argue towards a more immersive, sensory and interactive mode of experiencing fashion and clothing, similar in nature to the domestic space of the wardrobe. The paper draws upon German fashion theorist Ingrid Loschek's (2009) theory of clothing and architecture as second and third skins to provide a conceptual framework through which to discuss the modes of display used in the two installation works. Of interest is the relationship between clothing, memory and emotion and its ability to create a corporeal, live experience for the participant. Through an examination of two key concepts, clothing as dead and clothing as lived, this paper proposes that space and presentation can be specifically designed to generate an intimate engagement between audiences and bodiless clothes. Central to the paper is the notion of reclaiming the space between the viewer and the garment. The dominant modes of engagement - the fashion show and the costume museum - create insurmountable boundaries between the garment and the body. The forms of the two installation pieces discussed offer an alternate mode of display that enables the participant to move through, touch and even step into garments.

Keywords
fashion, installation, participation

Australian design group The Stitchery Collective use clothing and space as transportive tools within their immersive installation works. Individually working in fashion, theatre production and performance design, the Collective's work draws upon multiple design perspectives. This paper explores two audio-based immersive installations by the Collective; Collective Collection (2014), a site specific work held in an historic Queenslander style building in Brisbane, and From Home, With Love (2015), a site generic work - purpose built for a commission in a gallery setting for an exhibition celebrating the centenary of World War I. These two installations will be discussed through the theoretical lens of Ingrid Loschek's 'skins' (the body as first skin, clothing as second and architecture as third) (2009), which is particularly significant considering the use of clothing and space within the works. The Stitchery Collective utilise the lived experience through both sensory and oratory means, inviting participants to engage, interpret and collaborate through their experience of the installation works.

When considering fashion spaces and displays, three elements must be expressly considered - bodies, clothing and space. These elements are present in all places of fashion display, though the plastic shell of a mannequin often replaces the fleshy body. Ingrid Loschek (2009, 17) aptly contextualises these elements as modicums of human experience and presence positioning clothing and architecture as extensions and containers of the corporeal body's spatial form; interfaces between the body and the exterior environment. Loschek utilises the metaphor of 'skin'; the flesh as the first skin, clothing as the second and architecture as the third. Considering this intimate relationship, Loschek's metaphoric extension of the flesh into these forms can be extended to help understand the manifestation of human presence within clothing and architecture, particularly within domestic spaces like those used within the The Stitchery Collective installations.

The Collective Collection

"Can you hear me? Good. I want to show you something special. It won't take long but you have to trust me. Don't worry about looking silly or doing anything wrong. Let the party carry on around you. Just listen to my voice and let me lead you. See that glass door in front of you? Walk up and look inside. That woman is my great aunt. This was her house. That is her, in her twenties, as she would have looked in this house. Throwing parties just like this one. She was always wearing something she had created, hand sewn, not always with great skill, but with pride. Hear that music behind you? Head towards that sound, up the stairs. I want to show you something, it won't take too long. This big old house leaks stories."(Audio excerpt from Collective Collection, The Stitchery Collective, 2014)

Through the use of storytelling, the opening lines of the audio accompaniment to Collective Collection (2014) initiate an engagement with both the installation space and the material objects within the space. The overarching aim of which was to establish an encompassing environment that is wholly immersive for the participant. The installation was deliberately designed to display a collection of garments made by The Stitchery Collective. In this sense the installation was positioned within a fashion context, where a purchasable product was being showcased. However, the installation is in direct opposition to typical forms of contemporary fashion shows. For the Collective, the comfort and familiarity of the domestic environment was integral to developi the engagement between the audience, clothing and space. For that reason the chosen space for the exhibition, Franklin Villa, a heritage listed Queenslander built in 1892, directly reflected this domestic environment. The familiar comfort of the domestic space creates an environment that allows the participant to tap into their own personal memories of domestic space and therefore enabling a deeper immersion within the space.

French philosopher Gaston Bachelard discusses connections between memory and architecture within his book The Poetics of Space (1994). Specifically, he establishes the idea that your first house is imprinted on your psyche as a child and that you interpret any room you ever walk into in relation to that first world you knew, "for our house is our corner of the world. As has often been said, it is our first universe, a real cosmos in every sense of the word" (Bachelard 1994, 4). Bachelard's (1994) emphasis on childhood experience as a lens of interpretation and understanding is important to an understanding of the work. Much of the audio consists of real, personal and nostalgic memories of childhood events. While the details may now be blurred by time, the sensory - the strongly remembered sounds and smells from these years - are clear. It is this idea of recreating and interpreting clothing through the lens of memory that allows such an intimate connection; be that of a remembered domestic space or recollected stories of clothing.

Loschek defines architecture as the "encasing of 'air-space' in which people spend time, move around and store things" (2009, 17), in this sense the third skin is not limited to walls and objects but includes all that is encased within the 'air-space'; including smell, sound and light. Anthropologist Peter Pels has suggested that our interaction with objects is best experienced through the use of the senses (1998, 100). This is confirmed by Sarah Winter who explains that, "tactile and sensory-based environments allow the participant to engage in lived and sensory modes, which provide a richer and deeper connection with the space" (2014, 84). Within Collective Collection (2014) the audio guided the audience through the spaces, inviting them to touch the object, feel the fabric of their clothes and share stories. In addition to atmospheric sound and guided instructions, the audio also directed the participant to consider other sensory experiences in the space; "I came in here because I loved the smell. The heat of the day, the wet air, the clean linen, the dry cotton", "One time I spilt half her perfume, the room still smells of it. Lily of the valley", "Touch the glass, is it cool?". It also asked the participant to reflect in more intimate detail; "Take a moment to feel the weight of your clothes. Do they move when you walk? Do your shoes pinch? Did you chose your favourite thing to wear tonight?".

While the use of an unconventional space addressed the Collective's desired intention of immersive engagement, it also presented some dilemmas; by displacing the traditional forms of the fashion exhibition/show, it also displaced the traditional display of fashion; that is, clothes shown on bodies. The conventional modes of display – be they on models or mannequins - would have disrupted the space. Models would have diminished the intimacy of experiencing the space, instead creating a different, tension filled intimacy between the performer who is being watched and the participant who is watching. Furthermore, the static presence of the mannequin would have created a sense of falseness or artifice within the naturalness of the domestic setting. Instead, the clothing within the work was consciously displayed in a way that would look natural in the domestic sphere (discarded on the floor, carefully draped over the back of a chair, hung in a closet, pegged to dry as laundry) giving it a sense of being worn or lived in. Thus alluding to the presence of bodies, even in their absence; a lived experience of the space and objects.

From Home With Love

"This. This is my jacket. My uniform. My stamp that I am an Australian amidst a sea of strangers. It identifies me, and hides me. I remember when it was brand new, crisp, starched. My mate Ted was keen to join. So there I was. People had looked admiringly at me as I walked home in my uniform, rifle slung over my shoulder. The bus driver wished me luck and refused to take my money. The boots squeezed, they were a little tight, but the fella had assured me they would relax with time. That patch there on the right, the blue and black one? That tells people I'm in the 25th. The jacket is important in the trenches at night. It's comforting. Reminds me why I'm here. Sometimes I think if it wasn't for the uniform tying us together, reminding us that we are fighting for each other... Well, you'd just go a little mad." (Audio excerpt from From Home With Love, The Stitchery Collective, 2015)

From Home, With Love (2015) was a site generic, interactive installation, based within the State Library of Queensland Gallery, that invited the audience to engage with the intimate experiences of Australians on the frontline and at home during World War 1. The installation was separated into three tableaux that replicated the objects and spaces of a soldier, a nurse and a domestic family at home during the war. The first area featured a heavy military coat, the second an apron and the final was comprised of a number of small pieces including a collection of knitted socks, parcels to be sent away and decorative war memorabilia. Like that of the Collective Collection (2014) installation, audio was used to direct and engage the audience. The stories used within the exhibition were fictional, based on research of the real experiences and correspondence of Australian soldiers, nurses and families. The installation was designed to be both interactive and tactile with the participants encouraged to pick up and put on items of clothing that retained small indications of their fictional past; a pretty rock picked up by a soldier and hidden in a pocket, stains on a nurse's apron, an army sock with the embroidered initial of a loved one off at war.

From Home With Love was a commissioned work, intended to engage audiences with the somewhat overwhelming topic of WW1. The work was specifically commissioned to be interactive and was part of a greater exhibition which included artefacts, video and audio recordings, the type of which has become increasingly important within the museum context (Clark & De La Haye, 2014).

The original concept behind this work was to emphasis the small humanities of the war, in particular, objects of material comfort. Research into the home front and the effort to knit socks for soldiers was central to the development of the work. Simple objects, such as the sock, took on greater significance during this time, both for citizens on the home front - as a small act of assisting and protecting their loved ones overseas and at war - and the soldiers - who treasured the comforts of a dry pair of socks amidst the discomforts and horrors of war. Correspondence between those away and those at home was also highly important. In each of the three built sets - soldier, nurse and home front - both objects of material comfort and correspondence were foregrounded. The soldier's jacket housed a precious letter. The nurse's apron had her vanity full of postcards. The home front's half knitted socks lay in front of a dresser draw full of letters.

From Home With Love (2015) invited participants to wear the clothing as they experienced the installation; using Loschek's metaphor for clothing (2009, 17), the participants were literally stepping into another's skin. Due to the generic architecture of the gallery, this installation required the clothing to act as the conduit for the immersive experience. While the participant could clearly see the artifice of the built set - which only existed in a two metre square panel and hence did not contain the participant - the touching and wearing of clothing created a strong tactile connection between the participant and the experience. Like that of *Collective Collection* (2014), the spaces of From *Home With Love* (2015) alluded to lived interiors. While the rich domestic interiors of Franklin Villa allowed *Collective Collection* (2014) to tap into the sensory (particularly the olfactory) to heighten this experience, the environmental restrictions of a gallery meant that this was not a possibility in *From Home With Love* (2015). Instead, the lived was emphasised through personal and intimate objects; domestic items, letters, washing and shaving equipment and by the wear and tear of the clothing. The installation was designed to have a travelling narrative/journey with the final set replicating features of the iconic and highly localised Queensland style home. This was positioned to engage the participant's own experiences with familiar lived domestic spaces, and bring the audience back "home" at the end of their journey.

Experiencing Clothes - Lived and Dead

In the early development of the installation design, the intimate experience of clothing, both the experience of wearing clothes and viewing clothes, were considered. Two significant experiences emerged when looking at how clothing is perceived when a body is absent. These two experiences were named 'dead' (described as haunted, eerie, alien) and 'lived' (characteristically inhabited, imbued with lived memory, intimate, subjective) and are echoed in the documented experiences of various scholars (Entwistle 2015; Wilson 1987, 1; Ash 1999, 139; Stallybrass 2012; Bell 1978; de Perthuis 2016).

Fashion studies have attributed a significant amount of attention to the connection between clothing and social identity (Entwistle 2015; Bell 1978; Simmel 1957; Barnard 1996), with clothing acting as a mutable system of signs, a window to the internal nature of the individual. However, as Entwistle (2015) points out, many of these studies tend to "neglect the body and the meaning the body brings to dress". The second skin is an apt term to apply to clothing, it is carried on the body, is designed to move with the body and mould to the body, and when the body is absent it retains the shape of the body's limbs and proportions. Entwistle (2015) attests "dress in everyday life cannot be separated from the living, breathing, moving body it adorns" and that "dress, the body and the self – are not perceived separately but simultaneously, as a totality". This totality means that when clothes are separated from the body and self - particularly worn clothing that has an established physical connection to the body and self - it will retain something of the body and self even in separation.

Within The Stitchery Collective installations, the absence of bodies as they manifest within clothing and space is highly significant to the design of participant experience. In particular the works aim to connect the participants to a lived, sensory experience of clothes and spaces. Indeed the sensorial element of bodiless clothing is particularly prominent within the creative development of both projects. As such, a short look at the two different experiences of bodiless clothes, dead and lived, is needed.

Elizabeth Wilson introduces her seminal text, *Adorned in Dreams*, with a description of the eerie, haunted experience of the costume museum; "The living observer moves, with a sense of mounting panic, through a world of the dead" (1987, 1). While this is perhaps a poetic exaggeration of what an individual feels in the presence of bodiless clothes, it acts to highlight the connection of dress to the corporal, and in extension, death. For Wilson these clothes are ghosts, "only half understood, sinister, threatening; the atrophy of the body, and the evanescence of life" (1987, 1); unsettling in their continued existence past the death of the body, self and time they were once connected to. Joanne Entwistle on the other hand, points to the context of the museum display as the point of alienation. She argues that, "the costume museum makes the garment into a fetish" (2015, 42); documented and displayed in a museological setting, the garment is cut off from the familiar experience of clothes, as they are worn, felt, smelt and arranged in everyday life.

Experiences of 'lived' clothes seem to be strongly contextualised by these sensory connections, which tap into the individual's own lived experience and memories. Clothing can be universally comprehended, as all people, regardless of race, gender, age or class, dress the body (Entwistle 2015; Ash 1999, 131). So while cultural and social practices of dress can differ, the material and sensorial experiences are, in a general sense, common. Juliet Ash (1999, 128) explains how in connection to this commonality in material and sensorial experiences, part of the individual's comprehension of bodiless garments is through a projection of their own personal experiences on to the garments. Clothing in the absence of bodies hold "'several' memories of clothes: as they have previously been represented [cultural, social, historical]; as they appear to us in our lives [personal, subjective]; and as imbued with memories themselves [material, sensorial]" (Ash, 1999, 128). The Collective's installations function to engage these "several" memories that bodiless clothing holds.

The Stitchery Collective's installation works *Collective Collection* (2014) and *From Home With Love* (2015) are immersive in nature, focusing on a solo participant experience that evokes memory recall and subsequent emotional engagement. Although similar in form, there are distinct differences between the two works. The *Collective Collection* (2014) was an audio-based, immersive, site specific work held in an historic three story Queenslander in the iconic Brisbane suburb of Highgate Hill. Collective Collection emerged primarily as an organic creative process exploring fashion display design and engagement, with the site informing many of the creative, and staging, decisions. Reflecting on Loschek's notion of architecture as a third skin (2009, 17), the site was of pivotal importance in creating immersion and emotional engagement for the participant.

From Home, With Love (2015) was also an immersive audio work, however it was site generic in form - commissioned for an exhibition celebrating the centenary of World War I and the stories of Queenslanders. This installation was more heavily designed and manufactured, however it drew directly from the form and purpose of Collective Collection, inviting participants to engage and interpret through their experience of the clothing and space. In this work key signifiers of comfort and domesticity were an integral part of the purpose built design, bringing the homely to the institutional gallery space. In the absence of a rich architectural third skin, Loschek's notion of clothing as a second skin (2009, 17) was the key to immersion as participants were asked to literally step into another's clothing (a soldiers jacket, a nurse's apron, a hand knitted sock), thereby creating a vessel for remembering.

Within these installations the design of space and presentation acted as contextualising factors to how clothes were experienced. By identifying two forms of audience experience, clothing as dead and clothing as lived, this paper proposes that space and presentation can be specifically designed to generate an intimate engagement between audiences and bodiless clothes. Through the use of immersive, sensory and interactive modes of experiencing fashion and clothing Collective Collection (2014) and From Home With Love (2015) attempted to connect participants to a lived, sensory experience of clothes and spaces. By considering these installations through the lens of Loschek's 'skin' theory (2009, 17), it can be suggested that clothing and the domestic environment are, through extension, part of the totality of the body and self, and hence innately manifest ideas of human memory and presence.

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Design for healthy eating: engaging children to understand food practices

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ABSTRACT

Design for behaviour change is concerned with how design can influence people's behaviour to address the challenges our society faces. It requires better understanding of the users, their context and particularly, the factors that affect behaviour (Tang, 2010; Zachrisson and Boks, 2012). The discipline of User Centred Design (UCD) offers numerous methods to gather this type of insight from adult participants, but little is known about effective data collection with children. This paper presents a review of UCD methods and assesses their potential to provide designers with useful insights into children's eating attitudes and behaviours to promote healthy eating. This paper begins with an investigation of the determinants of children's healthy eating from a range of disciplines including economics, psychology, and sociology. Methods for user centred design for sustainable behaviour (Zachrisson and Boks, 2015) which could be used to uncover children's eating behaviours, practices and beliefs are evaluated. Conclusions are drawn as to their suitability for the data collection with children for design for healthy eating. The findings of this review will inform the development of design interventions to promote healthy eating by children's age and stage of development as part of the Downsizing project funded by the Biotechnology and Biological Sciences Research Council (BBSRC) and the Diet and Health Research Industry Club (DRINC) UK.

Keywords

user centred design, data collection with children, design for healthy behaviour

INTRODUCTION

The food children eat in their early years can influence their dietary habits later in life. It is important to understand the factors influencing children's food choices and consumption to support the development of appropriate interventions facilitating healthy eating (HE). Design has been recently recognised as a potential approach to fostering healthier behaviour (Ludden and Hekkert, 2014). Designers shape the development of products and services that help people change their behaviour and adopt healthier lifestyles. The discipline of User Centred Design (UCD) offers numerous methods to acquire insights into the factors and contexts that affect people's behaviours (Zachrisson and Boks, 2015), but little is known about how to gather such insights from children. Children as users have their own preferences, interests and needs (Druin, 2002) and developmental needs (Fails et al., 2012) that are different to those of adults. The purpose of this paper is to review the relevant literature that engages children in the design process in order to identify suitable methods for investigating children's eating behaviour. In this paper, in line with Barker and Weller's (2003) research, "children" refers to those aged below 16.

Understanding Children's Eating Behaviour

Darnton et al. (2013) propose extensive determinants of HE for children (Table 1) based on an Individual, Social and Material (ISM) model which considers three different contexts that influence people's behaviours. The ISM model is an outcome of factors and variables that are derived from three main disciplines – social psychology, behavioural economics and sociology and focuses on both behaviours and practices. The individual context consists of habits and skills. The social context is related to social norms and shared meanings that are associated to particular actions and people's networks and relationships. The material context includes wider environment that constrains and shapes behaviours, i.e. infrastructures, technologies, legislative and policy frameworks.

Material	Consumer culture	Convenience food culture
	Infrastructure	Food/Convenience shops; Super/Markets; Growing places
Social	Socio demographics	Age/Gender/Ethnicity/ (Dis)advantage
	School	Sector; Policies; Environs
	Family activity	Food choice/Eating patterns
	Parenting	Parenting styles; Rules
	Friends	Attitudes; Norms
	Media exposure	TV viewing; Eating patterns
Individual	Skills	Eating; Cooking; Shopping
	Habits	Tastes; Preferences

Table 1. The HE determinants for 2 to 11 year olds (Darnton et al., 2013, p.15)

The determinants of children's HE of ISM model include:

- ***Consumer culture:*** There has been an increasing demand for convenience foods such as ready meals and fast food. They are often high in energy, fat and sugar, and cause weight gain. Some of these target at children.
- ***Infrastructure:*** Supermarkets are predominantly influential on food choice. Supermarkets are particularly exposing children to high-energy dense foods in the checkout area or at children's eye-level.
- ***Socio demographics:*** Social and demographic variables are closely associated with the consumption of unhealthy foods in children. For example, mothers who are younger, less educated with a lower social level tend to feed large amounts of unhealthy foods such as sweets, chocolates and crisps for their children (North et al., 2000).
- ***School:*** School is a key place that provides opportunities for children to learn about HE behaviours. School feeding programmes, the food provision in schools, peer influences and what schools teach about foods are significant in the food consumption of children.
- ***Family activity:*** Family eating patterns strongly influence children's food choices and consumption, e.g. structured mealtimes can be helpful for balanced eating habits.
- ***Parenting:*** Parental food attitudes, skills and confidence, eating behaviours and feeding styles are critical for HE in children, especially for under 12s (Darton et al., 2013). Overeating in children is highly influenced by the amount of food served and the amount of prompting to eat by a parent.
- Friends: Peer pressure most often contributes to children eating unhealthy food during social interaction. One study demonstrates that overweight children are more likely to imitate when they see their peers taking a bite or snacking (Bevelander et al., 2013).
- ***Media exposure:*** Food advertising has a strong impact on children's food preferences, eating patterns and nutrition knowledge. Children's exposure to advertising is increasing via television, radio and internet. Children aged 8 and younger are particularly vulnerable to sophisticated marketing techniques due to their incapability of judging the commercial purpose (Carter et al., 2011).
- ***Skills:*** Children's healthy eating skills are less obvious due to their lack of cognitive ability to distinguish what foods are healthy. However, children learn what, when, and how much to eat through direct experiences with food and by observing the eating behaviours of parents and peers.
- ***Habits:*** Eating habits relating food choices, likes and dislikes may be firmly formed at childhood. Irregular eating habits of breakfast, snacking between meals and drinking sweetened beverage instead of water are highly related to unhealthy eating habits in children.

User Centred Design Methods to Communicate with Children

Several studies have attempted to adopt a child-oriented approach to design. Involving children in the design process helps designers to understand the specific needs of children as their likes, dislikes, wants and needs that become more sophisticated (Nesset and Large, 2004). Also, children can provide new, useful and advisable ideas that adults might not think of (Druin, 2002; Nesset and Large, 2004). The UCD methods of engaging with adults provide some of the background for design partnering methods with children. However, it is argued that developmental differences between children and adults including cognitive, motor, social, emotional, and communication abilities necessitate additional supports and changes in these methods when working with children (Spratling et al., 2012; Fails et al., 2012). Table 2 provides a summary of the methods used to work with children in design processes.

Methods	Description
Talking	This method provides children with the opportunities to talk freely about anything they feel important or describe their experience (Spratling et al., 2012) e.g. in pairs. It helps to build a rapport between a researcher and children. However, children aged 2-3 may not have appropriate verbal skills.
Drawing	This method collects children's thoughts using crayon and pen drawings (Druin 2002). It is useful to understand what children are interested in or what they are thinking on a research topic. It may involve one-on-one work between children and adults as some children tell short narratives about their pictures while other children briefly draw about their thinking (Maagerø and Sunde, 2016).
Peer observation	Children are asked to observe other children and draw what they observe. Adults are asked to write what the children say for their pictures. This method collects what the children see their peers doing in a place or situation. It is a time-consuming technique that requires collaboration between children and adults (Guha et al., 2004).
Video recording	Children are provided with video cameras to record activities. Children feel less self-conscious about the existence of a camera since one of their peers is using it (Alborzi et al., 2000).
Writing a diary	This method asks children to keep a notebook that includes everything that they think important or a list of things they think what needs for a project. However, children aged 7 and younger may not have enough cognitive ability to complete the notes (Alborzi et al., 2000).
Taking a picture	This method gives children photo cameras and they are asked to take pictures of how they use the product and where they use (Oosterholt et al., 1996).
Focus group	This method is a group basis discussion about a research topic which is more useful than interviewing a child alone as children feel more comfortable when they are invited with peers (Alborzi et al., 2000). The communicative ability can vary between participants, and the speed of interaction development among participants can be slow (Acocella, 2012).
Face-to-face interview	This method is a conversation between a researcher and participants and it is recommended to use open-ended or indirect questions when this technique is carried out for children (Vasquez, 2000). Other cues such as children's voice, intonation and body language can provide extra information (Opdenakke, 2006). However, age-appropriate interview may be difficult as a child's developmental level may be different with what a researcher expect (Vasquez, 2000).
Questionnaire	This method is a written set of questions to collect direct responses by using more child friendly techniques such as pictorial Likert scales and accessible language, tone and construct that are appropriate appealing to young children (Barker and Weller, 2003). Children aged 7 and younger may not have enough cognitive ability to fill out the questionnaire (Moses and Baldwin, 2005).
Direct observation	This method looks for activity patterns, particularly common for research with children aged 4 and younger due to limited communication and writing skills in children's early years (Druin, 2002).
Low-tech prototyping	This method creates co-making mock-ups that designers and children co-construct using common materials such as Post-It notes, scissors, sticky tape and coloured pens. It is useful for idea elaboration with children from the early stage of the design process but takes time and patience to construct mock-ups (Scaife et al., 1997).
Prototype testing	Children are observed with the prototypes and asked direct feedback and help in creating new products before being released to the world (Druin, 2002).

Table 2. Methods of communicating with children

	Consumer culture	Infrastructure	Socio demographics	School	Family activity	Parenting	Friends	Media exposure	Skills	Habits
Talking	■	■		■	■		■	■	■	
Drawing	■	■		■	■		■	■	■	
Peer observation							■		■	
Video recording	■									
Wring a diary	■	■		■	■		■	■	■	
Taking a picture	■	■		■	■	■	■	■	■	
Focus group	■	■		■	■		■	■	■	
Face-to-face interview	■	■	■	■	■		■	■	■	
Questionnaires	■	■	■	■	■		■	■	■	
Direct observation				■		■	■		■	■
Low-tech prototyping									■	
Prototype testing									■	

Table 3. Matching methods with determinants of healthy eating for children

Reflections on the methods involving children in design process

Table 3 summarises the conclusions from the review by matching the methods with child-specific determinants of healthy eating.

This paper presents a range of methods that can be used to better understand children's behaviours and encourage their participation in creating appropriate design solutions to promote healthy eating. Literature suggests that it is advisable to use a combination of methods which solicit perceptions and beliefs with those that record actual behaviour in the context in which it occurs. Applying a variety of methods can also help designers to investigate determinants and contexts for healthy eating from different angles, providing a range of visual, verbal and written outputs which can be valuable for design for healthy behaviour in children. Furthermore, the developmental needs of children should be taken into consideration as they are included in the design process of HE interventions.

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Discover Hong Kong

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ABSTRACT

The purpose of this project is to design a promotion of special attractive spots in Hong Kong, through introducing Hong Kong as a traveling game book and aim to soothing people's stress and feel enjoyable via people attempt to discover about Hong Kong. The result of this research reveals people might do something without a significant reason, but needs an attractive incentive.

In order to enhance the attractiveness and incentives for participation, all design was mainly based on user experience to design. Among them, Gamification is the core element in this design, which means the application of game-design elements and game principles in non-game contexts. Based on the observation and analysis, positive effects can be found in majority studies of Gamification. Inspire by the packaging, it was found that tear off something can provide a gaming experience and create expectation when user tearing something. As for result, it was used on the product and the promotional items.

The intention of minimalist information aims to create a mood that makes people looking forward to something and increase the sense of adventure. Especially the information cards are only show the map with not much detail and information with an associated description to encourage user discover the surrounding of the attractive spots.

Eventually, people will find some interesting things in the city, but they have not even noticed in the past.

Keywords

gamification, stress relief, traveling in Hong Kong

With many agree, Hong Kong is a rapid-paced city, which also brings a lot of stress into our life. Based on the early-stage findings, it has illustrated that our happiness, pressure or other psychological quality is getting badly then before, wherein the group "aged below 30" has been decreasing continuous four years. It has also been shown that happiness, as much as it can be measured, does not necessarily increase correspondingly with the comfort that results from increasing income. Since external factors seems not the main reason that affecting our quality of life, it seems that we can probably enhance our quality of life through our living habits.

The core reason that makes this project begin is also because of the situation of student are being stressful in Hong Kong nowadays. People can hear much news about that, some of them may even commit suicide during a bit of depression. It is necessary that should be done to distract their attention on pressure and raise people's happiness.

According to the personal investigation, which is aiming to find the most workable and popular method of release people pressure, it was found that people are having their individual definition of comfort, which is matched with the slow movement's vision - Living at a more comfortable pace. And people also tend to travel abroad because they think there is something that Hong Kong is incomparable with, such as culture, surroundings, local people, things or others, they think it is incomparable with Hong Kong. It is not saying most of us may think about traveling to relax ourselves immediately is a wrong or bad idea, but the point I care about is why we think about leaving Hong Kong at the first moment, but not thinking there are many places in Hong Kong that we have not visited before?

In addition, there is one more thing was found that people may want to stay in Hong Kong, although some of them may not sure are they really familiar with Hong Kong or not, people are still willing exploring Hong Kong and feel interest if there have a travel guide about the featured region in Hong Kong.

This project was inspired by my real personal experience, where is happening in a place that I suppose was familiar with, but I get lost at that moment. That experience brings me an adventure which had led me to discover another side of that area. Which makes me associate that a question, is it possible to turn that experience to be an adventure? We may find something surprise while we get lost.

The purpose of this project is to design a promotion of special attractive spots in Hong Kong, through introducing Hong Kong as a traveling game book and aim to soothing people's stress and feel enjoyable via people attempt to discover about Hong Kong. It was also trying to increase the possibility of raising the interest and enjoyment in our daily life.

I believed that traveling in Hong Kong has a potential to be promoted as there are many special attractions in Hong Kong we might not notice that, and helping them release their pressure.

The project was mainly designed for aged 18 to 25, but it is also suitable for other aged people to use. The reason of choosing aged 18 to 25 is because of they are workers and student, as they are easier to empathize with the target audience, easier to accept new things, lower costs to do something new and they should be having less worry about time management.

In order to enhance the attractiveness and incentives for participation, all design was mainly based on user experience design. Among them, Gamification is the core element in this design, which means the application of game-design elements and game principles in non-game contexts.

Gamification is the application of game-design elements and game principles in non-game contexts. Gamification commonly employs game design elements which are used in so called non-game contexts in attempts to improve user engagement, organizational productivity, flow, learning, employee recruitment and evaluation, ease of use and usefulness of systems, physical exercise, traffic violations, and voter apathy, among others. A review of research on gamification shows that a majority of studies on gamification finds positive effects from gamification. "Everyone has the capacity to enjoy games if there's a good reason to do so." said Yu-kai Chou, the Original Creator of the gamification framework. Gamification can create motivation, encourage people to do an action, to do something they do not want to do, but it does something meaningful to them. Gamification is not only single way, it can use various elements and methods, combined with the game elements and game design to solve problem's outside of the game.

The project is trying to use the gamification to attract people to achieve the project objective, from branding and identity to user experience are kept providing incentive to let users enjoy the project. The project was finally designed a travel guide which had introduced some secret or recommended attractions in Hong Kong. It was chosen 20 locations that are the most valuable and enjoyable place to be recommended. Those 20 locations were turned into four main categories, Historical, Relax, Playful and Religious, which is supposed to help the user to find the suitable attraction for themselves.

The project called "揭揭香港" (Discover Hong Kong). "揭", in Chinese is meant to open, uncover, discover or expose something, like I want the audience to discover Hong Kong. And the logo design is also combining the elements on the street. The main visual color of Shatin was chosen yellow was because I think Shatin is a cheerful and trendy district. Yellow is also feeling warm in this community and because of it is an eye catching color as the first book of Hong Kong Kit series. Consider with the user experience when we use travel guide, it was designed to a mission card size, 90cm height and 120cm width, it is portable to bring the information out.

Here is how the book works - First, you choose a category to find what topic you want to travel. Then, you can tear out one or few pages randomly (user will only know the recommended attractions and the details until they tear that page out). Finally, you can get the card, read the introduction and ready to go!

In the page of the table of contents, this page is going to create a mysterious mood from directly showing the attractions geographical position on the map, but without the location name. The information card and the table of contents page is also trying to create a mood that makes people look forward to something and increase the taste of adventure.

The information cards are the most important part of the travel guide as those information cards are designed with gamification elements, which is also the incentive part that leading user following the instruction to the attractions, and using the surrounding of the attractions to relieve their pressure. Inside the card, it shows a simplify map to lead user how to go to the attractions, according to study others mapping information's benefits and disadvantage, I believe my target audience has the ability to handle and understand the minimalist map, so I only had kept the basic information to help them arrive from the closest MTR station to the destination. Also, it has a description about that attractions can how to help you relieve their pressure.

The intention of minimalist information aims to create a mood that makes people looking forward to something and increase the sense of adventure. Especially the information cards only show basic map and information with an associated description to encourage user discover the surrounding of the attractive spots. Eventually, people will find some interesting things in the city, but they have not even noticed in the past.





12-12 & indee footwear: an exergame system facilitating strength for task training for older adults recovering from stroke

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ABSTRACT

Suffering a stroke can severely impact an individual's quality of life. With effective rehabilitation it is possible to recover the mental and motor functionality that was damaged by the stroke. However, rehabilitation can be very taxing on the individual, both physically and mentally, and many struggle with maintaining the motivation to continue.

In an effort to make rehabilitation more engaging, we explored the incorporation of a digital game system into the recovery process. This system converted prescribed exercises into gameplay using a special shoe controller designed to facilitate Strength for Task Training (STT). STT is a novel physiotherapeutic process that revolves around performing brief but intensive strength training (priming) prior to task-specific training to promote neural plasticity and maximise the gains in locomotor ability (Signal, 2014, p. 46). The complexity of developing a rehabilitative aid for an older audience necessitated the design process to be open to both clinicians and users. The regular consultation with health professionals helped maintain the integrity of the system as a physiotherapeutic aid. The inclusion of older adults in user tests helped refine the accessibility of the system and address the diverse contextual needs of the target demographic.

The final output included a digitised dominoes game called 12-12, and Indee Footwear, smart footwear that enabled STT through tracking the foot's movement and a modular weighted sole attachment. This prototype system was the amalgamation of the knowledge acquired through an iterative, user centered design approach. The system provided a novel and adaptable means for older adults to rehabilitate and showed promise as a positive addition to the recovery process.

Keywords

engagement, rehabilitation, stroke

INTRODUCTION

Stroke is one of the most common causes for long term disability among older adults in industrialised nations (Alankus, Lazar, May, & Kelleher, 2010, p. 2113). Hemiparesis (the weakening or loss of control of one side of the body) is the main impairment following stroke (Shirzad et al., 2015, p. 361). Such impairment greatly restricts a person's ability to lead an independent life. It not only affects their motor capabilities, but their sense of individualism and self-esteem.

The loss of lower-limb functionality in particular can produce a feeling of social isolation through a loss of independence, affecting one's sense of identity (Binstock and George, 2001, p. 232). Lower-limb functionality impacts a person's basic needs (e.g. walking, going to the lavatory, getting out of bed), therefore became the recovery focus of our research.

Recovery from stroke requires repetitive and intensive rehabilitation. This can be incredibly tedious for patients and a lack of interest or motivation can result in incomplete treatment and lower recovery rate (Barzilay & Wolf, 2013, p. 182, Gerling Schild, & Masuch, 2010, p. 67, Lee, Tien, Chen, & Chen, 2012, p. 435, Moreira et al., 2010, Schonauer et al., 2011). Consequently, the exploration of patient engagement with physiotherapy has been acknowledged as a priority for researchers (Jack, McLean, Moffett, & Gardiner, 2010, p. 227, Lee et al., 2012, p. 435).

The Intervention

Games are an excellent means of generating engaging experiences. They generally involve the repetition of specific behaviours, yet elements of their design keep these behaviours from becoming monotonous. A player who enjoys the content of rehabilitation expressed through gameplay will likely play more often and for longer, exposing them frequently to beneficial content (Flores et al., 2008, p. 381, Liu, Ip, Shum, & Wagner, 2014, p.4). Therefore, we proposed to explore how a digital game could be incorporated into the rehabilitation process through the use of a special controller.

A custom game controller was implemented in the form of a prototype pair of smart shoes with an attachable weighted sole. The design used removable sensors to translate lower limb movement into in-game interactions. The design of the shoes and weighted sole provided a simple and safe way to engage in unsupervised Strength for Task Training (STT); a novel physiotherapeutic process that revolves around performing brief but intensive strength training (priming) prior to task-specific training to promote neural plasticity and maximise the gains in locomotor ability (Signal, 2014, p. 46).

Serious games, or "games that have a main purpose other than entertainment" (Moreira et al., 2010), are becoming more and more common as the industry develops. Due to their nature, the entertainment value of these games is often seen as less effective than their primary industry counterparts. This is most likely the result of the medium still being in a state of development and having not fully explored the characteristics that make games so captivating (Alankus et al., 2010, p. 2115, Flores, et al., 2008, p. 381, Gerling et al., 2010, p. 66, Martin et al., 2014, p. 101, McLean et al., 2010, p. 520, Moreira et al., 2010, Orvis et al., 2008, p. 2416).

The game's theme was based on block dominoes. Some studies suggest that existing digital games deviate too much from the physical games older adults are familiar with such as card or board games (Mahmud, Mubin, Shahid, & Martens, 2008, p. 403, Nap et al., 2009, p. 247, Orvis et al., 2008, p. 2418). Ma et al. highlight the importance of users being familiar with a system before it requires them to perform complex actions (2007, p. 688), therefore we decided to digitise a traditional game that an older audience might recognise.

Clinical Input

The development process of our intervention was open to regular input from several clinicians. Discussion with these clinicians explored different aspects of the recovery process; the role of the clinician, patient experience and expected difficulties. They established the need for a game controller that can adapt as the patient progresses in their rehabilitation. STT requires the patient to engage in intensive strength training followed quickly by task training to promote neural plasticity (Signal, 2014, p. 47). The solution was to create a weighted sole that attaches to the user's smart shoes. The patient can then increase the load as they progress by adding steel weights to the weighted sole, maintaining intensive strength training.

User Testing

The time constraints of our research prevented us from investigating any changes to our user's mobility as a result of using our system. Instead, we focussed on accessibility of the system and usability heuristics.

Method

Iterative user tests were conducted on a small sample of three participants, all of whom had experienced at least one stroke resulting in hemiplegia or hemiparesis. A custom device was made for each participant to address the side of their body that had been affected by their stroke.

Each participant was observed putting on the shoes and weighted sole without assistance, followed by a brief play session of 12-12 from a standing position. Gameplay involved a tutorial phase for the basic rules of the game, then a full round of the game with a randomised hand. Over this session, participants were required to perform thirty leg raises with the weighted sole and forty-five to sixty (depending on the randomised round) side steps with the basic shoe. Participants were encouraged to use think-aloud protocol during this process.

Tests concluded with a semi-structured interview, allowing for additional comments to be made that might have been missed by the think-aloud protocol. Questions were kept simple to avoid leading participant responses and they were free to speak in as much (or little) detail as they chose.

Results

It became clear early on that certain design decisions were not as intuitive when encountered by an individual with affected physical and/or cognitive capabilities. Elements of 12-12's user interface were deliberately simplified to avoid overwhelming players, yet we found the subtlety to be too much. Our participants struggled differentiating what items were interactive and requested more information on what to do during each phase of the game.

Addressing the contextual needs of stroke patients required the hardware to consider the specific ergonomic and usability needs of stroke patients. The game controller needed to be intuitive and require simple interactions, promoting its use across different levels of ability. Common cognitive deficits such as short term memory loss can be mitigated by structuring means of interaction that make sense to the user. Physiological impairments such as symptoms of hemiparesis can be addressed through facilitating one handed interactions. Barriers to use can be minimised by designing a smart shoe with an upper that is structured to allow the user to put on and take it off using one hand. The design of a weighted sole for strength training that can be put on hands-free and removed one handed can also promote usability whilst minimising discomfort.

Unsupervised STT takes place predominantly in the user's home. The aesthetic consideration can be an important factor in breaking down the stigma towards medical devices in the home (Pullin, 2009, p. 4), and creating meaningful exergame hardware. Exergame controllers that emulate the forms of objects in the user's everyday environment can help disassociate the hardware with a medical context. By designing a game controller in the form of a smart shoe that the users consider "fashionable" can attempt to break down stigmas of wearing a medical device in the home.

One of the strongest themes that became apparent from our participant's response was the importance of adaptability within the system. The significance of this quality was derived from the immense diversity of an older audience. Members of such a demographic each have a life's worth of experiences to draw from. Those who have suffered a stroke can have a variety of cognitive and physical deficits that range in severity. This complexity makes it difficult to reach 'universal' solutions and it is useful if a system utilises flexible parameters.

Conclusion

12-12 and Indee Footwear were created from the combination of knowledge from a range of research streams and design prac-

tices. The complexity of this project necessitated opening up the design process to clinicians and survivors of stroke.

Clinical input was invaluable for the development and integrity of our system as a physiotherapeutic aid. Regular consultation with these professionals helped direct the functionality of the system to something that was purposeful and effective.

The extensive diversity of an older audience, in regards to physical and mental capabilities, personalities and experiences, meant their contributions were integral to the system's development. The discoveries made through user testing prompted changes to the core design of both the device and the game. Revisiting our participants throughout the process enabled them to contribute to each iteration of the system. An open design process involving both clinicians and patients helped inform the design of an exergame system that aligns with the functional needs of clinician prescribed therapy, and the contextual needs of the patient.

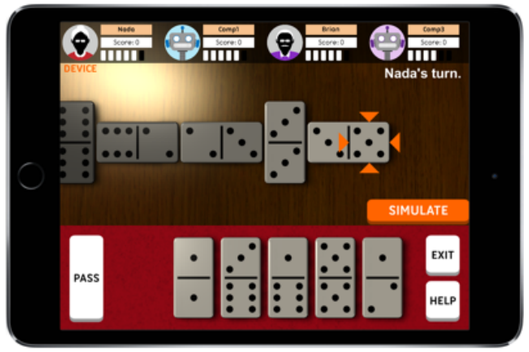


Image 1. 12-12 in-game screenshot



Image 2. Indee Footwear shoe and STT brace

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Designed for delight: exploring surprising applications of 3D printing in lighting design

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ABSTRACT

Designs that surprise us challenge our expectations and impact the experience and perception of our surroundings. Surprise is a useful tool for designers and can elevate a product from mundane to memorable; drawing attention and inviting engagement. Existing strategies have explored surprise in product design through the exploration of sensory incongruities, most notably visual-tactile incongruities (Ludden, 2008). 3D printing is an evolving technology that has capabilities traditional manufacturing is unable to achieve, including: building internal and complex structures, building with multiple materials simultaneously, and creating material gradients. Lighting design has been explored with 3D printing, attaining previously unachievable patterns, moving structures and light permeation control. Lighting designers have also investigated surprise and sensory incongruities. However, research has not yet been done to investigate how visually-tactually incongruous 3D printing can offer new strategies for eliciting surprise in lighting design. This research addresses this identified gap by assessing the applicability of Ludden's (2008) strategies to 3D printing. This was done through the design of a series of experimental objects and lights that sought to surprise through the use of visual-tactile incongruities. Developing and testing these experiments aided the development of new approaches to designing that addressed the unique opportunities 3D printing affords. The potential of the proposed approaches are expressed through the final designs of the interactive lamps; objects designed to inspire delight through their unique interactions and surprising qualities.

Keywords

interaction design, 3D printing, surprise

INTRODUCTION

Designs that surprise us challenge our expectations as well as impacting the experience and perception of our surroundings. Surprise is a useful tool for designers and can elevate a product from mundane into memorable; drawing attention and inviting engagement (Desmet, 2002; Overbeeke et al., 2005; Rodríguez Ramírez, 2011). Strategies have been developed for eliciting surprise in product design through the exploration of sensory incongruities, specifically visual-tactile incongruities (Fox-Derwin, 2011; Ludden, 2008, Ludden et al., 2008). 3D printing is an evolving collection of technologies that has capabilities traditional manufacturing is unable to achieve, including: building internal and complex structures, building with multiple materials simultaneously, and creating material gradients (Prince, 2014; Kim & Robb, 2014). Lighting design has been explored with 3D printing, exploring previously unachievable patterns (Buckman, 2016; Nervous System, 2012); moving kinetic structures (Jouin, 2016, Krasojević, 2014) and light permeation control (Atherton, 2013). Lighting design has also explicitly explored surprise and sensory incongruities (Grimaldi, 2008). However, research has still not been done to investigate how visually-tactually incongruous 3D printing can offer new strategies for eliciting surprise in lighting design.

Background

Ludden's (2008) strategies were conceived and analysed in the context of traditional manufacturing technologies and were not systematically explored through 3D printing. There is an opportunity to assess the applicability of these strategies to 3D printing as well as suggesting new approaches to generating surprise in product design. Polyjet Photo Polymerisation (PPP); a multi-material printing technology, was chosen as the primary printing technology due to its capabilities for hard and soft material blending (gradients, interlocking sections, materials within other materials) and high resolution finishing, lending itself well to setting up visual-tactile incongruities.

Design Phases

This research investigates how the unique qualities that 3D printing offers can generate surprise through visual-tactile incongruities in lighting design. This was explored through two phases; Phase one investigated and critiqued Ludden's (2008) strategies through an iterative research through design process (Burdick, 2003),

producing 23 physical experiments (Figure 1). These were tested with participants and data was collected using Observation (Zeisel, 2006) and self-reporting techniques including Questionnaires (Robson & McCartan, 2016), the Geneva Wheel of Emotions (Scherer, 2005) and Interviews (Kuniavsky, 2003). Analysing this data enabled the development of 4 approaches adapted from Ludden's (2008) strategies. Phase one used these approaches and design elements from the experiments in Phase One to design functional lighting objects. Each Phase's designs were tested with 10 participants.

The designs presented at this conference (Figure 2) were developed in Phase two to each address one of these approaches, using PPP to develop the control mechanisms and the light-emitting components for the lights. The designs all incorporated layered surprise and interaction (visual, tactile, hidden), attempting to increase engagement with the object. The interactions were often hidden; encouraging users to explore, contemplate, and experiment with different ways to turn the lights on.

Conclusion

The results of this research suggest strategies for how to apply 3D printing to elicit surprise through sensory incongruities that current literature has not put forward. It also expands the applicability of Ludden's (2008) strategies beyond her original researched field to 3D printing as well. The potential of the proposed strategies are showcased and expressed through the iterative physical experiments and the final designs of the interactive lamps; objects designed to inspire delight and enjoyment through their unique interactions and surprising qualities.



Figure 1. The 23 experiments developed for Phase one of the research. Each of the experiments explored a different angle on Ludden's (2008) original strategies for eliciting surprise with visual-tactile incongruities.

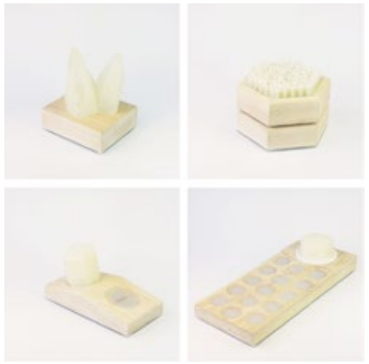


Figure 2. The four final lights developed for Phase two of the research. (Clockwise from top left) Design One: Malleable Structures, Design Two: Organic Formation, Design Four: Rotary Relays, Design Three: Spiral Connection.

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SoLoMo revitalizing nature renewal

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ABSTRACT

Rapid urbanisation progress in China is intensifying the contradiction of man and nature in an unprecedented way. Such long-term alienation from nature has resulted in a widely spread nature-deficit disorder among the young generation in metropolitan areas. Indeed, a huge imbalance between the supply and demand of Nature Education has occurred. In the exhibition, we introduced Nature X, the pilot design practice of SoLoMo Revitalizing Nature Renewal project, performed in Siping Community, including Tongji University campus, to revitalise the idea of LAO ZI - "mankind is an integral part of nature". Two rounds of iterative design and development were conducted in 2015 and 2016. Location-based AR gamification is designed to strengthen the viscosity of the learning community with consideration of the individual's immersive enjoyment, identity and collective synchronisation. Various communication tools such as Storyboard, Task Analysis Grid, Service Images and Interactive Prototype were used in the past usability testing for heuristic evaluation. The latest Prototype Test result shows that Nature X can function as an attractive media to communicate knowledge in an interrelated manner. The intervention value of design-driven nature education framework innovation could be described in 3 levels, including Interpersonal level of Imitation and joint attention, Collective level of biophilic Identity and Learning Community and Technical level of Social learning technology. By blurring roles of sharers and recipients, all of these will maximise the resonance of social networking interpersonal communication for collective-interaction between human and nature.

Keywords

open design, SoLoMo learning, human-nature interaction

Design Background

Rapid urbanisation progress in China is intensifying the contradiction of man and nature in an unprecedented way. The long-term alienation from the nature resulted in a widely spread nature-deficit disorder among the young generation. We could see a huge imbalance between the supply and demand of Nature Education in China's metropolitan areas; moreover, the Nature Education Industry in China is still following the old methods and impeded by the lack of public participation and smart technologies.

In the era of knowledge, ubiquitous network and crowdsourcing (Jeff Howe, 2006) technologies enable users to transform themselves from passive recipients of information into proactive information creators. Organisations and designers in charge of Social Communication project must be well prepared for the increasingly vibrant trend of participatory social learning, which requires cutting-edge design and education practice. For example, RSRB, which is the Royal Society for the Protection of Birds as the largest nature conservation charity in Europe, is an example of how crowdsourcing methods empowered an eco-friendly learning community by emerging social media applications, to accelerate the booming of RSRB members as crowdsourcing self-media for birds observation and protection. The case study illustrates a Gear-wheel production mechanism of crowdsourcing to take advantage of social network forensics for dynamic monitoring and analysis.

Design Objective

Jan 2015, by Integrating with new social learning theory, we initiated an open design project called SoLoMo Revitalizing Nature Renewal. Which aims at exploring how design-driven SoLoMo (social-local-mobile, John Doerr, 2011) could contribute to the interaction between human and nature. To revitalise the idea of LAO ZI - "man kind is an integral part of nature", whose philosophies have a strong impact on the development of Huaren culture and society for thousands of years. The main objectives are summarised here. Enabling the initiative engagement of people's knowledge for co-production of nature education; Transforming traditional theoretical nature education into the entire process of the daily observation; Bringing efficiency and joy into nature experience in the context of real world interactivity; Providing deploy design strategy of SoLoMo Nature education for the metropolitan, urban and regional space.

Pilot Design Practice

Design Probe

Nature X is the pilot design practice of this project, designed to be a location-based nature educational platform for outdoor AR exploration. The project started from an intensive user research in Siping Community including Tongji University's main campus. According to touch points and investigations of existing problems, 5 key restrictions on the openness of social nature education turned out. Namely the lack of attention, lack of knowledge, lack of motivation, lack of learning spaces and lack of learning media. Based on 157 valid questionnaires, the demand category and gradation was illustrated and the potential service strategy to design probe was concluded. We initiated Natrue X as pilot design practice to transforming the perception of people from passive recipients of services; enable the initiative engagement of people in natural knowledge co-production by cultivating social practitioners to reflect on their own knowledge creativity.



Figure 1. SoLoMo Interactivity

Design Conception

At 1st phase pilot field study, we have embodied history data from Tongji's on campus plants and spatial distribution to publish Tongji Nature Community on Nature X, which accelerate the cohesion of people, location, moment, interests and behaviors, so as to revive the real biophilic Lifestyle in Tongji community. Based on the plants species on Tongji campus and spatial and temporal distribution data visualisation, SoLoMo natural real game App is built to promote the socialisation, localisation and mobility of natural education. With the integration between online plants social contacts and offline plants exploration and cultivation, it aims at accelerating the interaction of people, places, interests and behavior, and promoting the campus as a platform for children, parents, and young people to learn about the spatial distribution of habitat, the relationship between vegetation habitat and biodiversity of the community, influencing neighboring areas and building "Tongji natural community". Transforming the in-class environment teaching into the whole process observation study during the entire campus life and guiding people to get close to nature, so as to cultivate correct ecological consciousness, good ecological morality and ecological aesthetic ability.

Concluding Remarks

The 1st phase of pilot design practice demonstrates our design version on driving SoLoMo Nature learning as a tool to catalyze Bottom-Up Nature Education Framework Innovation. From the new media perspective of "wireless ubiquitous - social computing - whole channel", constructing Web3.0 communication and feedback bi-directional interactive social communication, is conducive to enrich the ways and channels of human and nature interaction, and transform the ecological development from the government-led model to the one driven by collective creativity with public participation. Particularly, benefit the social engagement of people in natural knowledge co-production. Since natural elements have characteristics of dynamic, variety and uncertainty. Crowdsourcing could play an irreplaceable role in support the bottom-up Gear-wheel Co-production of Nature Education and Learning by taking advantage of social network forensics for dynamic monitoring and analysis. Therefore, Data value-added potential is throughout every process of public participation data crowdsourcing, big data analysis, intelligent verification, dynamic visualisation, and response services. All of these would formulate the bottom of a sustainable data innovation cycle of design for the openness of design process. Progressively building the ecological data networks covering the user groups from public, industry and government. Providing big data supports for the development of socialised natural education, urban ecological smart monitoring and management in China.

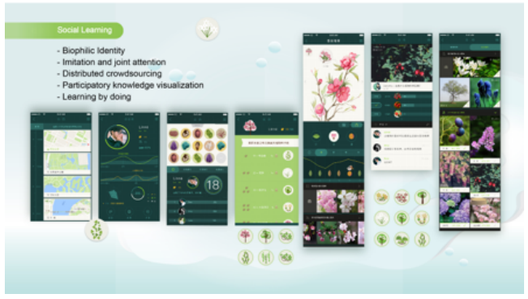


Figure 2. Social Learning

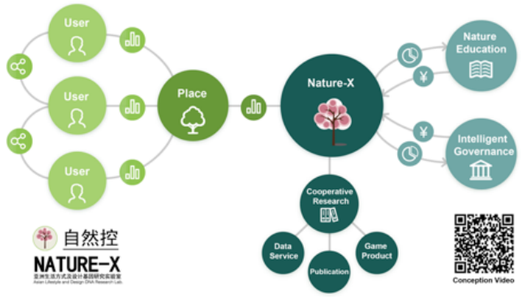


Figure 3. Stokehold Map

Art made from live scientific images to help and influence how they are visually communicated and distributed

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ABSTRACT

I gained first-hand experience of working with research scientists at the University of Nottingham Life Sciences (Cell Signalling and Pharmacology Group); the Natural History Museums Core Research Laboratories Imaging and Analysis Centre; and the Centre for Cellular Imaging, Sahlgrenska Academy, University of Gothenburg. I observed the work done at these laboratories to obtain first-hand insights into the use of advanced imaging as a major tool for scientific research. The scientists at the laboratories designed practical scientific activities to help me, an image-maker, to understand the reasons for and methods of their research in action. These techniques and technologies are rarely accessible to non-scientific specialists, yet constitute a rich area for artistic exploration, offering new knowledge of scientific processes, modes of observation, methodologies and software. Based on the observations I made and the materials I gathered in the abovementioned laboratories, such as mathematical and scientific data (still and static), a series of real-life films and recorded photographic images, I have produced a series of innovative visual responses to or translations of scientific images. Scientific computer software and the Adobe Digital Publishing Suite were used to reshape mand re-process the materials collected. A reflexive methodology of creativity in action was used to crossreference all aspects of this research activity to establish connections and define the new knowledge gained. The findings help frame this critical theoretical review.

Since September 2015 I have been going into three different laboratories to gain first-hand experience of working with research scientists who use advanced imaging as an important visual tool in their scientific investigations. The aim of this research is to build reciprocal relationships with my scientific collaborators to extend knowledge through interaction and to find out if it is possible to generate new insight through conducting an in-depth visual investigation.

As technologies become more sophisticated, ways of viewing and seeing samples (inert and live) are continually being developed. The super-machines that scientists use today to image samples are not normally accessible to non-scientific specialists yet imaging technologies present a rich area for artistic exploration. I am not a trained scientist, so the opportunity to gain first-hand experience of working with scientists who use advanced imaging offers a rich source of inspiration. And each scientific collaborator is keen to find new ways to generate understanding about the work they do.

Documentary evidence up to this point includes a series of real-life films and photographs supplemented with written notes and transcriptions from working in the field. Aspects of this investigation, to date, have extended my knowledge and appreciation of cutting-edge imaging experiments, technical and scientific procedures, and analytical methods employed by scientists that I have experienced.

One common rationale for this creative work is the study of complex systems. Scientific data, including cells, animal and natural structures, has been collected. This data is being reprocessed through innovative creative strategies and digital manipulation to produce new graphic design drawings, animation test pieces and 3D design work. Strategies are now being developed and detailed which test how this visual artwork can be disseminated to different audiences and how its impact can add to knowledge. This activity is revealing how this activity can be used as a vehicle to create a 'space' for new interaction with scientific data and advanced imaging specialists. Targeted audiences include imaging specialists and the wider scientific and arts community.

Keywords

translation, art, science

This research aims to describe the impact of this activity up to date and how this activity is contributing to knowledge through participating in three case studies:

- Experiencing internal structures of cells using microscopy from different imaging technologies
- The Cell Signalling and Pharmacology Group and Molecular and Cellular Biology Group
- University of Nottingham.

The School of Life Sciences Imaging (SLIM) department encompasses three units, all under one consistent structure: the Advanced Microscopy Unit (AMU), Cell Signalling Imaging (CSI) and Super Resolution Microscopy (SRM). This department houses some of the most sophisticated imaging technology available, providing cutting-edge imaging facilities to researchers across the University and external collaborators.

This research group is eager to find new ways of sharing their research with different audiences. They are trying to understand how cell systems work right down to a molecular level, examining in detail individual cell mechanisms. Advanced imaging is used as an important analytical tool to collect a range of data as scientists observe in microscopic detail how cells react when they are 'hijacked' by different compounds.

Over the last year, I have observed individual members at work on practical scientific activities, collected a wealth of information from scientific imaging experiments, attended forums and had in-depth discussions with Principal Investigators and individuals in their research groups about the major themes and imaging techniques being investigated. This experience is enriching my understanding of scientific concepts and how scientists use data, as well as providing a wealth of original material.

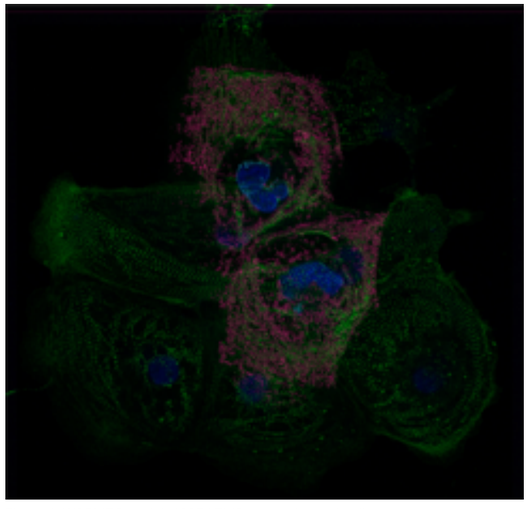


Figure 1. W2CMB2aactinin488DAPId2_centredmoredetail

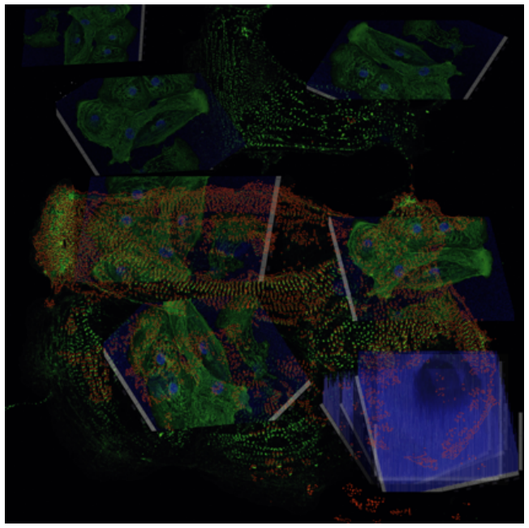


Figure 2. Mixed wc2drawing and 2.5D projection. Experiencing internal structures of cells using microscopy

Versatile Imaging as a three-dimensional sketch. Natural History Museum, London

At the Core Research Laboratories Imaging and Analysis Centre, over a three day period, I selected samples to image on the Scanning Electron Microscopes (SEM). SEM is used to investigate the fine structure of biological and inorganic material by making visible the invisible. The specimens selected were chosen because they contained a lot of structural information and are highly detailed. Two different SEM systems were used: first, the Zeiss Ultra Plus and, second, the LEO 1455VP. Each system uses a beam of accelerated electrons to produce strikingly detailed images at up to a 100,000 times magnification of the sample.

One of the new processes being piloted at NHM is Photogrammetry. It involves creating a large data set of images of a specimen over a 360-degree rotation. This builds up a wealth of visual information which is then used to create a three-dimensional digital representation. This is processed using three-dimensional software and outputted as a three-dimensional print. The project is important because it uses a range of cutting-edge advanced imaging techniques to process the three-dimensional data sets as three-dimensional printed models. Another novel process being employed uses thousands of multiple two-dimensional images to generate three-dimensional data sets. The images I generated from a range of specimens using SEM revealed unexpected repetitive structural detail.

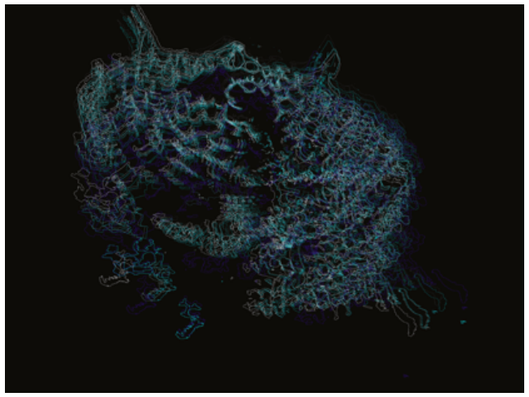


Figure 3. Radiolarian004 with a 5 degree rotation. Versatile Imaging as a three-dimensional sketch

Dermal drug delivery – How to increase bioavailability in viable skin. A multidisciplinary project, Centre for Cellular Imaging, Sahlgrenska Academy Gothenburg University, Chalmers and Malmo University.

Skin is important to us and has many important functions; it is our largest organ and designed to help keep our bodies working properly. The scientists working on this project have had several years of experience in applying optical microscopy techniques within experimental skin research, such as to create a mechanistic understanding of how a topical drug delivery system can be designed to target, for example, eczema at exactly the right place and not to be systematically taken up by the body.

I participated in a week-long imaging and analysis project to investigate how to control the release of drugs in the skin. Multi-photon Microscopy was used to image 'deep' samples of the skin to test different creams. Deep skin samples of pig skin were used as it has similar properties to human skin. The skin was imaged at a depth of 250 microns, which is deep in terms of distance through a sample.

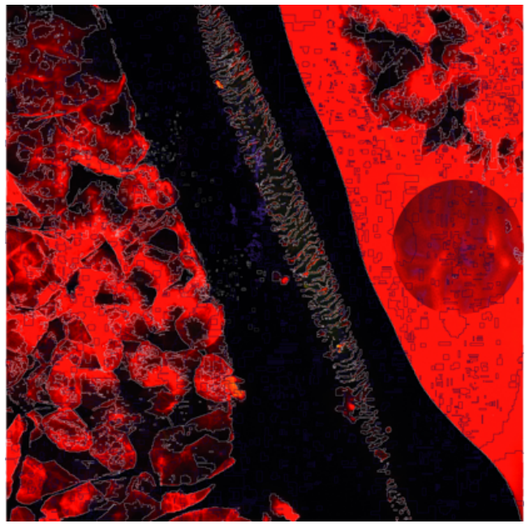


Figure 4. Bitesize skin. Dermal drug delivery – How to increase bioavailability in viable skin

The impact on both fields of expertise will be measured and disseminated through a series of outputs including an exhibition, publication and social media productions, all of which will contribute to the longevity and legacy of this investigation. The interdisciplinary visualisation models described will be the subject of critical analysis. The different strategies being developed to test how art work can be disseminated and communicated to different audiences are being formalised. Outcomes will be ambitious and wide reaching, adding knowledge from individual, group, institution, national and international perspectives. Links are being established further through a network of art and science organisations, funders, practitioners, academics and the media. Contextualising the key areas of knowledge, foundational theories and critically reviewing the discourse for national and international networks can be accessed at: http://www.joberry.co.uk

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Critical mass – a creative catalyst for participatory social change

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ABSTRACT

Design students were challenged to champion ethical and socially motivated issues, with the objective of engaging a 'critical mass'. The ambition was to innovative creative public interactions and to explore the impact of design activism on stakeholders. The problem-based learning project model, prioritised genuine student critical engagement, which resulted in external/internal co-design and open practice, informed by contemporary research. The project was evaluated through documentation and engagement of the 'mass' mobilised by each campaign.

The project, written by Hanrahan and Temple, commenced with workshops, lectures and research lead by academics and practitioners, inspired and challenged by activists and ethical innovators. Over the following three months, students sustained connections with diverse cultures, generations, spaces and disciplines. Subjects addressed included: the provenance of clothing, intergenerational disconnection, youth depression, fracking, gender identity, 3D printing, food waste, digital security and urban gentrification. Outcomes were pervasive, reaching out locally, nationally and globally via: guerilla projections, participatory performance, subversive publications, response encounter kits, creative petitioning, conflict mediation and social media subversion.

The project evolved beyond the course requirements leading to national press coverage, an exhibition and a documentary film. Acting as a further catalyst, this instigated and inspired the publication of a newspaper exploring eco-social themes. The breadth of the project expanded with the momentum of engagement, reaching its own critical mass of 350+ student participants. Evaluation revealed the use of real-world design activism to positive effect, challenged student empathy with current affairs and provided living resistance to some of the challenging issues of our time.

Keywords

activist, empathetic, engagement

Aims

Critical Mass is a student project that unleashed the power of critical design thinking on contemporary social problems, exploring and demonstrating the transformational potential of creativity. The project established brave and cultivated social collaboration, because we believe that '…universities and research institutes have a major responsibility to contribute to society through their public engagement, and that they have much to gain in return" P. Manners, Director of The National Coordinating Centre for Public Engagement / author of the Engaged University.

It demonstrates that at a time when democratic processes are often failing us, the individual and small collective has a unique capacity to question, deconstruct and communicate, to call to action in a manner far beyond its scale.

The project intention was to challenge students' preconceptions of process and purpose, so that they might use real-world creative activism to transformative effect. The objective was to do this by 1. exploring the potential of collaboration and participatory research and communication, 2. challenging their relationships with society and current affairs.

The aim was to explore and ask: How do we empower students to 'change the world' with design? How do we encourage young communicators to select a social challenge that they can affect? How do we create contexts for invention in a jaded, diverse and complex society? How do we propose political and ethical interventions to audiences through empathetic means? How do we nurture critical skills as a key driver for change? How do we instigate perspective change in audiences with established value systems?

By mobilising students to investigate social and political issues that had an important personal significance to them, we exploited their capacity to solve the macro by examination of the micro. We found that the participants learnt more and were more personally engaged when determining emerging issues, which related most particularly to their own experience and deep co-design investigation created further depth. Their responses to current affairs were more progressive, informed, open and engaged than in previous social projects or in other campaigns with more commercial constraints.

Process

The project (and film) follow a narrative of:

1. Ignite: Workshops and debate with campaigners / ethical practitioners / social innovators.

2. Evolve: Groups selected their own 'issue' and undertook focused research; developed their own brief; exchanged knowledge with their contemporaries; engaged key stakeholders in co-design, ideas development and testing; and demonstrated problem-based learning

3. Mobilise: Design interventions extended out into the student and local community, as well as connecting with national and global campaigns.

4. Evaluate: Projects were reviewed and critically evaluated by staff, students and collaborators – quantitatively where possible e.g. number of participants, signatures, social media shares etc as well as qualitatively through critical reflection and discussion.

5. Share: A focused term of activity culminated in an exhibition that enabled the project outcomes to extend beyond the campaign audiences to all college students and staff.

6. Catalyse: The exhibition set an informative and inspiring backdrop to a workshop that instigated the production of a 'Critical Mass' eco-social issue of the University newspaper.

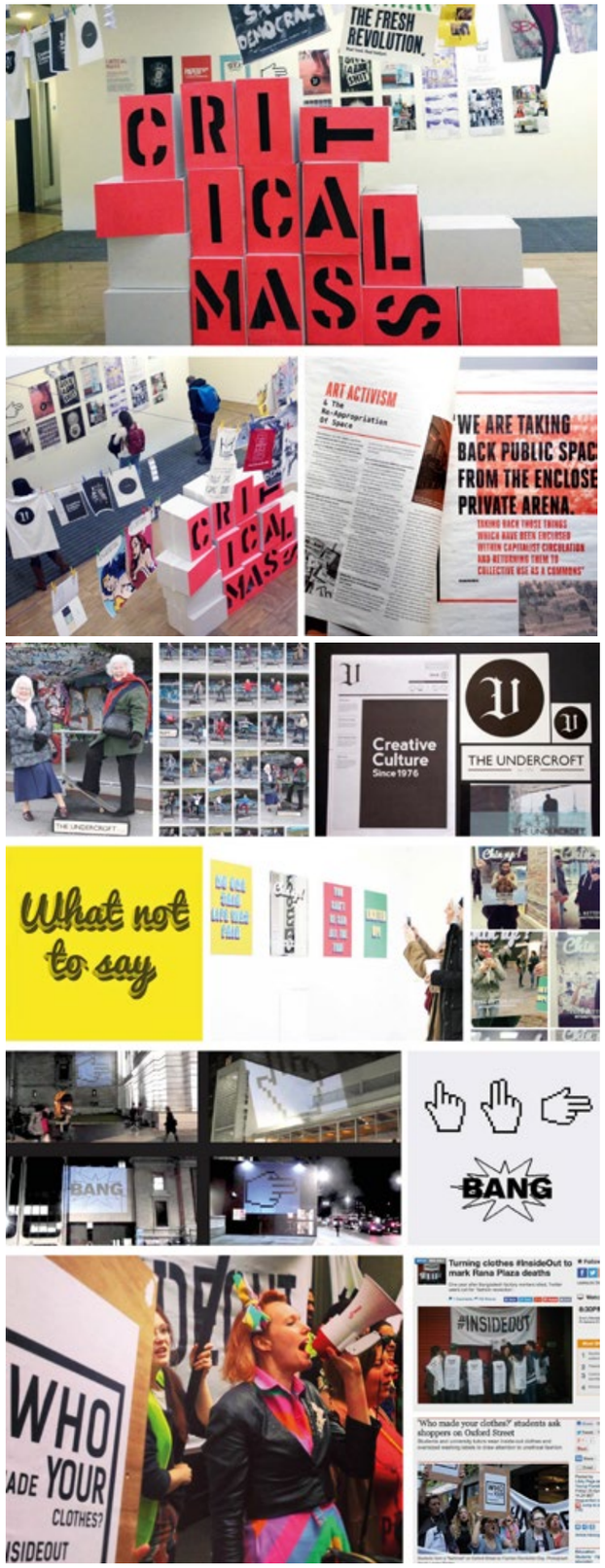
7. Empower: The documentary film and report of the project was circulated, and is available online for staff as a teaching resource.

Collaborative enquiry occurred on a multitude of levels: as part of the briefing, as an essential dimension of the subject investigation and as a key part of the dissemination. The project model embraced knowledge sharing and nurtured collaboration via – tutorials and pitches with experts; workshops with stakeholders, constructive and informed peer-reviewing; open source access to research and development blogs; exhibition, newspaper and film. It allowed genuine external/internal co-design practices to occur, informed by contemporary practice-based research. Engagement and learning was truly collaborative as open practices, stakeholder participation and teamwork formed the basis of each phase.

Conclusion

Audiences both within and outside of the University became empathetic to a range of causes. The ripple-effect of this award-winning* project was a positive shift in college attitudes and sympathies, which has made some headway in enabling a '… change of educational culture towards the realisation of human potential and the interdependence of social, economic and ecological wellbeing which can lead to transformative learning.' S.Sterling, Sustainable Education, Re-visioning Learning and Change – Schumacher Society Briefing No.6 Green Books, Dartington.

*University of the Arts Sustainability Award.



Woolf works – a three act ballet

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ABSTRACT

How have individual and collaborative methodologies evolved in pushing the boundaries of choreographically driven artistic language and endeavor?

The film design work for The Royal Ballet's 'Woolf Works' directed by Wayne McGregor, acts as an integral component of multi disciplinary design thinking. It considers the qualities of different genres and technologies and awareness of these within a projected spatial performance design context. Combining design and choreographic methodologies, solutions are found to harmonize and enable the co-existence of dance, texts, film projection, light, sound, space and set, creating an original language of expression through instinctive, organic and reactive approaches. This relies on reflexivity where preserving individual research and practice identities are embedded into the fabric of the process. By designing a structure where collaboration holds these individual voices as one entity it becomes possible to create hybridized design solutions for original sensory experience within the theatrical arena. It also acts as an exemplar for the potential of employing design practice through multidisciplinary approaches. Act 3, The Waves, is a perfect distillation of this, representing a deep primal reconnection through which the choreographic design is critical in its effect upon the audience. Here the emphasis highlights the building of components gradually highlighting individual and then total collaborative execution.

Keywords

theatre, projection, collaboration

INTRODUCTION

"Gillian Anderson reads Woolf's suicide letter. Behind her, a huge photograph of waves slowly begins to move, Ravi Deepres' video imagery gradually speeding up to become a tidal surge" – Independent 2015

'Life is not a series of gig-lamps symmetrically arranged; life is a luminous halo, a semi-transparent envelope surrounding us from the beginning of consciousness to the end… the proper stuff of fiction is a little other than custom would have us believe it.' – Virginia Woolf, Modern Fiction

The film design of The Waves created by Ravi Deepres relies on individual then collaborative art and design processes to function not only as a film but also as an integral component of a multi disciplined designed choreographic expression. One of several film design sequences created for Woolf Works based on the life and work of Virginia Woolf as inspiration, and in collaboration with Wayne McGregor and The Royal Ballet. The film was shot at Godrevy lighthouse, one of the locations Woolf visited frequently in Cornwall which was also a major influence on her writing. Act 3 The Waves, was created with the intention of capturing her use and absorption of the power of nature and shifting time. The decision to present this cinematically at a huge scale changes the performance space into another more filmic experience initially, which gradually evolves into something more physical with the other design forms of choreography, sound and light. The entire design and artistic practices within the ballet reflect essences of her innovation in writing through contemporary mediums.

From blackness and the designed speed of the revealing black curtain (treated as a reverse guillotine) the waves, shot during very violent weather, confronts the audience on an epic scale. The actress Gillian Anderson reads out Woolf's suicide note as the audience is hypnotized by an image which almost appears still yet moves in extreme slow motion. Spoken word and video image become one, transitioning into dancers gradually appearing from darkness highlighting the seamless shifting of inter connected states.

The sequence was shot using a Phantom Gold camera which begins as a virtually static photographic image then gradually builds up into a raging torrent, lasting over 25mins, a duration rarely used with this kind of technology.

Commissioned by Royal Opera House, Choreography Concept and Direction Wayne McGregor. Original three act film design and creation Ravi Deepres, Set Design We Not I and Cigue, Lighting Designer Lucy Carter, Music Max Richter, Dramaturg Uzma Hameed.



Links:
https://vimeo.com/135814774
www.roh.org.uk/productions/woolf-works-by-wayne-mcgregor







Open design for development and youth

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ABSTRACT

The workshop calls for research projects that are working with open design for development and the youth. We are interested in sharing experiences, tools and methods for including the youth in the development. The workshop will showcase and utilise workshop methods developed and tested in Participatory Development with the Youth (PARTY) workshops with South African and Namibian San youth. The goal of the workshop is to share a vision about the methodologies used for including the youth in accountable democracy and designing their own services and call for methods that use inclusive and participatory processes to include the youth in discussion and development. These methods can utilise both low and high technological solutions. In the workshop we are asking what are the appropriate technologies that we can employ when including the youth in development. The workshop will embrace playfulness and visualization of information.

The workshop aims to open shared perspectives and experiences on how to design more effective methods and tools to foster development. The workshop goal is to share perspectives and experiences about how to co-design with marginalised youth by empowering them to take an active involvement in the development process. The workshop participants map the methods and tools for co-designing with youth. It will generate opportunities for future research dialogues with the participants interested in the PARTY project and tools for involving youth in the development processes. The workshop is organised by the PARTY research project funded by the Horizon 2020 research program.

Keywords

san youth, service design, marginalisation

Duration

2pm to 5pm

Expected number of participants

20-25 participants

Target audience

Academics, professionals and students

Project Description

The workshop calls for research projects working with open design for development and the youth. We are interested in sharing experiences, tools and methods for including the youth in the development. The workshop will showcase and utilise workshop methods developed and tested in Participatory Development with the Youth (PARTY) workshops with South African and Namibian San youth. The challenge of developing sustainable solutions that involve the disadvantaged sections of the population highlights the need to understand these target groups thoroughly. The San groups constitute around 2% of Namibia's total population and 15% of the country's indigenous populace and are among the poorest of all the tribes. 80% of the San in Namibia have been dispossessed of their ancestral lands and resources and dislocated from environments that bred a knowledge system which sustained their livelihoods historically. The goal of the workshop is to share a vision about the methodologies used for including the youth in accountable democracy and enabling them to co-design their own services and future education, job and p opportunities. The workshop calls for methods that use inclusive and participatory practices for youth participation in development processes. Moreover it will be an opportunity to discuss and explore the use of low and high technological tools and solutions for youth development.

PARTY project aims to carry out international and inter-sectoral

collaborations in the field of developmental cooperation through research, innovation staff exchanges and sharing of knowledge between researchers, the target group, local actors in Southern Africa and international aid organisations. The project advances service design approach in the field of developmental research and develops innovative, participatory methodology and tools for developmental cooperation.

The project builds on the background of service design prototyping, which offers new innovative methods and approaches that could facilitate change and capacity building with the young unemployed people in Southern Africa. The hypothesis of service design is that when the end-user participates in the design process, new ideas, service needs and different ways of utilising technology are encountered. Service design processes and methods can help in innovating human-centred service concepts (Miettinen, 2011). The research project focuses on the means and tools for enabling the San youth to participate in the service development in their own communities and recognising the stakeholders that can enable the transformational change and increased inclusion in decision-making in their communities.

The strong focus on participation and co-creation links a service design approach to user-centred design processes, where the theoretical background comes from human-centred design theory (Beyer and Holtzblatt, 1998) and cultural probes (Mattelmäki, 2006). The epistemological and methodological background of service design can be identified to be consistent with participatory action research (Reason, 1996; Selener, 1997; Smith, Willms, and Johnson, 1997). The emphasis in these related approaches is on action and participation. McTaggart statement about the general goal of participatory action research (1997: 2): “it is participants’ own activities which are meant to be informed by the on-going inquiry” fits accurately with this project. Adapted versions of participatory action research into community-based co-design approaches have been established in past rural design projects in Namibia (Winschiers-Theophilus, Bidwell, and Blake, 2012) supporting fundamental principles of service design.

The workshop aims to open shared perspectives and experiences about how to design more effective methods and tools that foster/enhance (local) development. The workshop goal is to share perspectives and experiences about how to co-design with marginalised youth by empowering them to take an active involvement in the development process. The workshop participants will further map the methods and tools for co-designing with youth and experiment with two of the presented tools. Furthermore, it will generate opportunities for future research dialogues with the participants interested in the PARTY project and tools for involving youth in the development processes

This is a half a day (3 hours) workshop presenting to the participants some of the methods and tools used in fieldwork in PARTY research project with the youth, such as Rich pictures, Enacting prototypes and Future me CV, and enabling them to use these methods to contribute to the mapping of design methods used in participatory development with the youth. The workshop will be structured in 4 main phases:

1) Introduction to PARTY project and the methods used with youth on field (2-2:30 pm)

2) Team forming and use of the methods: each team experiments at least two of the proposed methods (2:30-3:30 pm)

3) Sharing of the results and open discussion (3:30-4 pm)

4) Collective visual mapping process as a result of the discussion (4-5 pm)

The takeaway for the participants will be information and experience about methods and tools used for working with the youth in open development context, visual and experiential workshops methods tested with the San youth and a shared understanding of the methods and their impact as well as the visualisation of the methodological field used by the workshop participants in their own open design and research work.

Preferred Venue and Equipment Required

The room provided should allow participants to move easily in the space, to move tables and chairs according to their needs. The room should be provided of a projector and speakers, chairs (for 20/25 people) and 5 or 6 big tables to enable the participants to work in teams (we expect to form 5 or 6 teams). Moreover each method requires different materials to be provided to the participants:

Rich pictures method: 6 or 8 large sheets of paper (A2 or 70x100 cm) and 25 markers (basic colours such as, black, blue, red)

Enacting Prototypes method:

Future CV method: 30/40 A4 papers, 25 pen

Collective visual mapping: post-it notes (a pack of 3/4 colours), markers and pen (see above), blue tack, a surface where to write on like a white board.

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Biography

Satu Miettinen is a Professor at the University of Lapland, Finland. See www.satumiettinen.com

Valentina Vezzani is assistant professor in Design at the University of Madeira.

Shilumbe Chivuno-Kuria is a lecturer at the Namibia University of Science and Technology.

Fabrizio Pierandrei is an architect He has been teaching at Politecnico di Milano since 2005, and dedicating his expertise and research interests to Paco Design Collaborative.

Michelle van Wyk works at the Cape Peninsula University of Technology.

Hanna-Riina Vuontisjärvi is a project manager for Horizon 2020 funded project PARTY (Participatory Development with Youth).

Affordable housing?!

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ABSTRACT

In less than 25 years, two-thirds of the world population will live in cities. The growing demand for residential space in cities, however, is being met by an increasingly short supply. As a result, the pressure on the international housing market has dramatically grown in recent years. At the same time, the need for social housing stock has never been greater. According to a study published by Demographia in early 2016, the city of Hong Kong, for instance, was rated as having the least affordable housing among major markets in 9 nations, followed by cities like Sydney, Vancouver, San Jose and London. But also elsewhere, affordable housing has become an enormous social challenge. In search for alternative solutions to the housing dilemma, more and more citizens take the situation into their own hands. They are claiming their right to housing.

The workshop “Affordable Housing?!” explores alternative approaches to housing developed bottom-up and along the lines of self-empowerment, affordability and solidarity. After all, housing is a necessity of life. For this purpose, a living room installation is set up in public space, which features international case studies and pilot projects in the social housing debate. The pop-up living room serves as a space of exchange where experiences, ideas and visions on the housing question are collected. By this means, the workshop seeks a low-threshold approach - encouraging active participation of conference participants as well as local people from Hong Kong - as everyone is an expert in housing.

Keywords

affordable housing, bottom-up, co-existence

Abstract and Rationale

Cities are booming. According to demographers in less than 25 years two-thirds of the world population will live in cities. The growing demand for residential space in cities, however, is being met by an increasingly short supply. For this reason, and also owing to international speculation, the pressure on the housing market has dramatically grown in recent years. At the same time, the need for social housing stock has never been greater. According to a study published by Demographia in early 2016, the city of Hong Kong, for instance, was rated as having the least affordable housing among major markets in 9 nations, followed by Sydney, Vancouver, Auckland, Melbourne, San Jose, San Francisco, London, Los Angeles and San Diego. In all these cities, housing prices have tripled compared to people’s incomes over the last couple of years. But also elsewhere, affordable housing has become an enormous social challenge. In search for alternative solutions to the housing dilemma, more and more citizens take the situation into their own hands. They are claiming their right to housing.

The public workshop “Affordable Housing?!” explored alternative approaches to housing developed bottom-up and along the lines of self-empowerment, affordability and solidarity. After all, housing is a necessity of life. For this purpose, we set up a living room installation in public space to promote the importance and value of the right to (affordable) housing. The pop-up living room featured international case studies and pilot projects in the social housing debate and served as a space of exchange where experiences, ideas and visions on the housing question were collected. By this means, the workshop sought a low-threshold approach - encouraging participation of conference participants as well as local people from Hong Kong - as everyone is an expert in housing.



Image 1. Living room installation on the Hong Kong Design Institute campus

Project Description

The project “Affordable Housing?!” consisted of two parts. For both parts a living room installation was set up in public space - as a strategy to engage with many different people to share experiences and generate ideas on the notion of affordable housing on a bottom-up level.

(1) The workshop - the installation in public space

The first part of the project was a workshop, which was conducted by a team of three people from an interdisciplinary and international background. Together with the participants of the workshop a living room installation was set up in public space. The pop-up living room was equipped with furniture, e.g. a table for collective meals, a sitting area for casual chats and discussions - basically anything that is typically associated with housing. Our overall intention was to create a comfortable setting, which is not only attracting the attention of passers-by but also fostering active engagement to collect multiple perspectives on the housing question.

Participation of local people from Hong Kong was encouraged through the installation itself and the display of information such as international case studies and pilot projects in the alternative social housing debate. Moreover, as hosts of the living room, participants of the workshop implemented some low-threshold activities to launch a collective thinking process. To trigger a discussion with passers-by and to exchange and document individual housing experiences, postcards with guiding questions were provided: e.g. What does home mean to you? What about your current housing situation? What’s your housing vision? Do you have any good ideas of how people organize their housing situation? No mind-maps and flipcharts were used, but through residing together for a length of time, we rather explored different cultures and habits of living, needs and visions together. In this sense, the living room installation formed a platform for public discussion on how to live together in a sustainable and liveable manner.

As the CUMULUS conference was taking place in Hong Kong this year, gaining a Hong Kong perspective was the major focus of the workshop. The following topics were addressed:

- Housing conditions and satisfaction of local people in Hong Kong
- Housing trends, visions and utopias
- Mapping the international housing crisis with a particular emphasis on the local situation
- Alternative affordable approaches to housing developed bottom-up

(2) The installation at the Conference

For the second part of the project, which took place on the following day, the living room installation was moved to the CUMULUS conference venue. Participants of the conference were invited to engage with the installation at any time of the day, i.e. explore the collected postcards and reflect upon their individual housing cultures, or simply drink a coffee – anything people typically do in their living rooms.

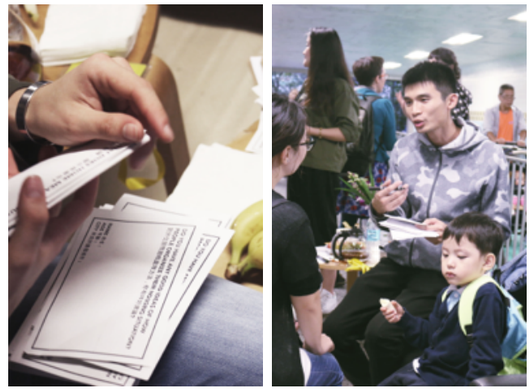


Image 2. Postcards with guiding questions to launch a discussion
Image 3. Exchanging housing visions with local people from Hong Kong

Target Audience

The goal of the project was to involve international conference participants as well as local people from Hong Kong - as everyone is an expert in housing.

Location

Being surrounded by housing estates, the location of the Hong Kong Design Institute provided a great location for the workshop. During the workshop, we moved the installation to different spots within the area, ranging from a courtyard of the public housing estate Choi Ming Court which was facing the exit of a shopping mall, a highly frequented pedestrian tunnel to the semi-public space on campus. Most of the time passers-by were surprised to find a living room in an unexpected environment. By placing a living-room into the public space the workshop achieved to open up, i.e. take the private (living room) into the public to trigger an open debate.



Image 4. The location of the workshop surrounded by housing estates

Short Biography of Organisers

Mu Bo

Mu Bo, ceramic designer; industrial designer; is a lecturer at the University of Engineering Wuhan, Art and Design Institute. He graduated from the Art and Design master programme, Ceramic institute of Jingdezhen in 2010, is the founder of Qingzefang Ceramic Studio which engages in research of clay and glaze and sustainable use of material and forms. MuBo graduated from the master programme Social Design_Arts as Urban Innovation in 2016, University of Applied Arts Vienna. In Social Design his major interest lies in the problems brought by the rapid urbanisation of China, especially the extinction of rural culture.

Markus Gebhardt

The artist and art-therapist grew up in Germany and is currently studying the master programme Social Design_Arts as Urban Innovation at the University of Applied Arts Vienna. The superordinate aim of his work is to raise consciousness towards the beauty of diversity and its various possibilities for deviant forms of co-existence within our society.

Christina Schraml

Christina Schraml is a Vienna-based urbanist. Her work is situated at the intersection urbanism and culture. She holds a joint master of Arts in European Urban Culture POLIS at the Estonian Arts Academy, VUB Brussels, MMU Manchester and Tilburg University and a master in Philosophy at the University Vienna and RHUL London. Since 2012 Christina teaches at the master programme Social Design_Arts as Urban Innovation at the department Arts and Society, University of Applied Arts Vienna.

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Design for e-very-one: exploring the possibilities of open-ended innovation focused on individual diversity

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ABSTRACT

Deep user and stakeholder involvement is becoming the norm when designing systems, while the design process of durable goods remains relatively secretive, aiming a single, well-balanced design solution to a well-defined problem for a generalized user group. Nonetheless, ever since industrial design became a widely recognized, formalized profession in the modernist era, its attention is turning gradually from mass products for the general public towards niche products for sub-cultures, and towards specific solutions (either products or systems) for communities. Could the next step be turning to individuals?

Practices such as mass customization have already started to expand single solutions into wider solutions spaces to accommodate better the diversity of potential users, but the possibilities remain limited; conversely, designing ad hoc for individuals is prohibitively expensive for widespread diffusion. One emerging opportunity for opening the design process towards users is using Digital Fabrication with parametric/generative design (computer algorithms), which makes it possible to define an unforeseeable multitude of products in collaboration with the end users, according to their needs, desires, identities.

The proposed workshop aims to map user diversities that are deep enough to benefit from the engagement of every single user in a collaborative design process, thus identifying possible points of intervention and raising new opportunities for developing authentically personal artefacts in the contemporary creative and productive environment. This activity will build on (and contribute to) an ongoing research project that aims to elaborate design strategies and workflows for design practitioners in search for serving better ‘e-very-one’.

Keywords

personalization, digital fabrication, parametric design

Background

Nonetheless recent advancements, the design process of durable goods tends to remain secretive and involve only a (possibly representative) small sample of potential end users, giving much more trust to the intuition and capacity of synthesis of the designer, which may or may not be sufficient for foreseeing all the diversity of potential individual users.

Recognizing this tendency more than two decades ago, resourceful industries have started to practice mass customization, demonstrating that open-ended design can be highly desirable for many users. Piller (2009) highlights the importance three key ingredients of mass customization: (1) adequate Solution Space, (2) Robust (manufacturing) Process and (3) intuitive Choice Navigation. The latter two are getting easier to fulfil thanks to advancements of information technologies (digital fabrication, generative design tools, web applications and frameworks, etc.). Conversely, finding the right Solution Space continues to be challenging, as it involves identifying the product attributes along which customer needs diverge. From a more design-centred perspective, Jos De Mul (2011) emphasises the importance of the virtuous handling of numerous variables: “The designer [...] should become a metadesigner who designs a multidimensional design space that provides a user-friendly interface, enabling the user to become a co-designer, even when this user has no designer experience or no time to gain such experience through trial and error.”

Therefore, creating an unforeseeable multitude of products needs a different design approach compared to designing a single solution: user diversity should not be circumvented, but considered as a resource to create authentically personal artefacts.

This opportunity is well acknowledged in the literature on Open Design; however, as Cruickshank (2014) notes, providing adequate guidance is fundamental: “with too much structure the outcomes are controlled by the hidden hand of the designer and people are simply selecting from a range of options laid down by them. Too little support and many potential creative contributions are lost because starting from a blank page is difficult, even for experienced designers.” Hence, aiming a widespread adoption of open design practices calls for a systematic work to find out: what and why should we diversify? How can we go beyond simple ornamental customization and enhance significantly the value of products by involving every single user in a collaborative design process?

Finding reasons for leaving the design open

Open design can help to serve better users' needs and desires by allowing intervention in different aspects of the product:

- aesthetic diversification to the identity of the user with ornamental interventions
- functional diversification adapting to variable forms, like the body (e.g. eyeglasses), products (e.g. phone accessories) or the environment (e.g. furniture)
- experience diversification to establish a stronger emotional connection with the user

The first two of these are relatively easy to discuss, but ideating meaningfully diversified experiences is a less straightforward task. Nonetheless, designers should deal with it, because even when people buy physical products, they pay for the experience that they hope have with it, as Pine and Gilmore (1999) describes in 'Experience Economy'.

The act of 'designing openly' can be an interesting experience itself, but if we aim a widespread adoption, the mere ideology of open design might not be sufficient to convince the naïve user: we need an engaging narrative in connection with users' everyday lives.

Many of the Open Design examples today are inspired and made possible by a digitally interconnected culture; digital technology enormously facilitates the detachment from real Space (turning to virtual space), from physical Matter (turning to bits) and from actual Time (turning to an autonomous Time), resulting in many new interesting experiences placed somewhere in-between Real and Virtual. Pine and Korn (2011) proposes to examine these crossover experiences similarly to the semiotic square, but with 3 dimensions, as the combination of: Space or No-Space with Matter or No-Matter and Time or No-time, constituting 2x2x2=8 'realms' that span between Reality and Virtuality; for example, Augmented Reality experiences are situated in real Space, actual Time, but with virtual Matter. This framework can be used also to expand product experiences towards the neighbour 'realms', by examining whether and which dimensions of an experience/product can be turned in into the opposite. During the workshop, this technique (with the aid of an example-rich 'cheat sheet') will help to inspire discussion about novel opportunities that benefit from Open Design.

Workshop Objectives, Method & Takeaway

The proposed workshop aims to identify and map possible user diversities that are deep enough to benefit from the engagement of every single user in a collaborative design process. This activity will build on (and contribute to) an ongoing research project that investigates the possible strategies and the necessary competences for the meaningful differentiation of digitally fabricated products through the involvement of the end user in a parametric/generative design process. The elaborated workflow will be divulgated at the end of the research project in the form of a Guideline, oriented to design practitioners seeking to serve better 'e-very-one'.

The 3 hour workshop will start with a brief introduction (½ hour) based on the previous considerations. Subsequently, participants will carry out a discussion (2 hours) based on a recent, not-yet-open design project, either of their own or of their students. Groups of 4-5 will discuss these through a set of questions, trying to transform the non-open design projects into open ones by accommodating special needs and providing novel experiences. This latter will focus on the real vs. virtual aspects of the experience, according to the previously described Space-Matter-Time framework.

Printed hand-outs will guarantee the fluid workflow: (A) an A4 sheet per participant summarizing graphically the introduction as a reminder and (B) one large matrix-like working sheet per group to help participants quickly and uniformly map their findings.

At the end of the workshop (½ hour), participants will discuss their findings through the visual confrontation of their working sheets, thus identifying tendencies, regarding both promising opportunities and potential issues.

As a takeaway, participants will obtain a perspective on the possible fields of intervention and the strategies of user engagement. As a follow-up and reminder, the organizers will send a digital poster derived from the superimposition of the working sheets.

Overall, the expected result of the workshop and the research project in general is the expansion of the design profession's capacity of meeting the increasingly divergent needs in the experience economy, with the long-term vision of facilitating a more open attitude to product design and innovation.

Organisers

Loredana Di Lucchio is an Associate Professor at Sapienza University of Rome. Her research activity is focused on the relationship between production and consumption in contemporary societies within a convergence between the approaches of the Strategic Design, Product Design and Design for User Experience.

Viktor Malakuczi is a PhD candidate at Sapienza University of Rome. His research investigates the possible strategies and necessary competences for the meaningful adaptation of digitally fabricated products through the involvement of the user in an algorithmically enhanced (parametric/generative) design process.

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Design in times of transition

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ABSTRACT

The element of time plays a fundamental role within the process of ecological, economical and social transition. The « process of transition», within a broader reflection on the role of temporality within sustainable creative practices, offers in my eyes todays' most powerful and disruptiuves ideas that will support the design of tomorrow's culture. I will focus on three fundamental components of this delicate transition moment in time: the main ideas, theories and methodologies capable to enlarge and set the discours around transition, some inspiring and highly human creative forms of actions undertaken by artists and designers in the past years and some more concrete but sensitive stories crossing varied fields and disciplines showing grassroots efforts that I would like to share.

Towards a Transition Design Methodology

In particular I would like to highlight what has mostly influenced my choice of focusing on the « process of transition» within the broader reflection of the role of temporality within sustainable creative practices. First of all I've noticed that the methodology chosen by a precise Creative Community, as Ezio Manzini1 would say or a Contributive Community, as Bernard Stiegler2 would say, called by the way the « Transition movement » is really pretty much the same as one of the most efficient design thinking models: the « what if methodology », among others applyed by the Dschool in Standford. This methodology accellerates the process of creating value and envisionning desirable futures and scenarios by supporting radical collaboration. The main difference is that in the more classical business approach of the « what if methodology » helps imagining future implications of different types of initiatives but too often remains in a phase of prototype or « graphic novel ». What I will explore and analyze are the real true and inspiring stories of transition of the Transition Initiative3, a 10 year old grassroot community project, founded by the permaculture designer Rob Hopkins that seeks to build resilience in the hypothesis of peak oil, climate destruction and economic instability by creating local groups that uphold the values of the transition model. By September 2013, there were 1130 initiatives registered in 43 countries. This concrete exemple shows and confirms that in this time of transition designers have to go beyond their capacity of inventing new design fictions or raising questions about the direction of future technology and society, and have to be able to generate debate and be capable of deeply analize, amplify and contextualize real grassroots cases.

Keywords

definition of transition (time/time-space/frontier...), art and design role and responsibilities, citizen and people transition practricies, activities and examples

The Cultural Role of Objects and Nature in the Present Transition Culture

In his university courses on Nature Merlo Ponty4 sees the fact of thinking about a temporality which is not constant as one of the most important problems of today's contemporary philosophy and opposes to this "trend", his project that consists in re-connecting time with conscience. His critique of the « form of time » demands the discovery of the observer's situation and the fact of bringing the derived space and time to their proper origin by providing their context and horizon. Timothy Morton5 goes beyond that and assirts that "When you realize that everything is interconnected, you can't hold on to a concept of a single, solid, present-at-hand thing "over there" called Nature, the most damaged idea of our modern society ». Will his "Hyperobjects", that not only become visible during our transitional time of ecological crisis, be capable of alerting humans to the ecological dilemmas by building different temporality frames? [4]

During the conference I'll question people around the concept of "ecological awarness" (the fact of realizing that there are lots of different temporality formats), about art versus craft or art versus design distinction that breaks down the concepts of Beauty and Usefulness and Uselessness always in the framework of transition.

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Open Design For

ENVIRONMENT

The Environment Track received around 40 submissions, out of which 11 papers, two workshops and five exhibits were finally selected. The three paper sessions plus two workshop sessions, including the leadership sustainability workshop that demonstrated the opportunities for new ways of being and doing by framing complex problems within the values and goals of sustainability, such as direct links to the United Nations SDG's. Designers demonstrated that they are setting new visions, new ways for people to engage and build healthier community and disrupt traditional production systems.

The synthesis of reframing and innovating towards holistic sustainability was seen to be a way to ask new questions that can lead to new artefacts, systems, mindsets, courses and outcomes that better empower our design students and their associated collaborative groups to innovate and address today's complex sustainability problems. Key concepts that were instrumental to driving dialogue, healthy debate and weaving the work together, when addressing complex problems such as sustainability, included a positive mindset, collaboration, transdisciplinary groups and dialogues, meta design, knowledge sharing, engagement, social innovation, creativity and narratives, systems and politics. With these concepts in mind design educators continue to evolve and balance curricula to prepare design students for new roles as central to tackling complex problems towards sustainability.

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Learning by planning: collaboration across the environment

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ABSTRACT

Learning by Planning; Collaboration across the Environment, is a partnership, and collaboration between two Schools separated by some 17,000 kilometres, the Design School, Linnaeus University, Växjö, Sweden, and the Architecture Department at Unitec Institute of Technology, Auckland NZ. Notwithstanding this vast literal spatial distance, the commonalities of design pedagogy are readily apparent within both programmes, even though, one being a core design field, and the other sitting within architecture end of design continuum or spectrum. This paper aims to investigate this mutuality by learning from one another by way of disseminating framework's, tools, design methodologies, and teaching praxis, and the core pragmatic similarity, that of embedded Sustainable Design. This proposition will parallel the context of each case studies of both courses / programmes chosen, from each Institute, and will conclude with a summary where foreseen outcomes will be addressed; Learning by Planning: Collaboration across the Environment.

Keywords

studio live projects, speculative design, sustainable design

INTRODUCTION

Learning by Planning; Collaboration across the Environment, is a partnership, and collaboration between two Schools separated by some 17,000 kilometres; the Design School, Linnaeus University, Växjö, Sweden, and the Architecture Department at Unitec Institute of Technology, Auckland NZ. The two programmes are quite different in genesis, the architecture programme needing to have all projects evaluated by an external body of architects for accreditation, whereas the Bachelor of Arts Design+Change is a newly minted programme which owes its accreditation to the Swedish Higher Education Authority, which evaluates programmes on a five-year cycle, the last time in 2014.

Notwithstanding this vast literal spatial distance, the commonalities of design pedagogy are readily apparent within both programmes, even though, one being a core design field, and the other sitting within architecture end of design continuum or spectrum. This paper aims to investigate this mutuality by learning from one another by way of disseminating framework's, tools, design methodologies, and teaching praxis, and the core pragmatic similarity, that of embedded Sustainable Design. This proposition will parallel the context of each case studies of both courses / programmes chosen, from each Institute, and will conclude with a summary where foreseen outcomes will be addressed; Learning by Planning: Collaboration across the Environment.

New Zealand Context

Department of Architecture (Architecture, Interior Design, Landscape Architecture) Bachelor of Architectural Studies – Second Year 2012-2016 Subject – Studio praxis, Live build projects

The New Zealand paradigm considers how practices can be positioned within the context of sustainable transitional architecture and "live build projects", via a zero waste and zero budget parameters. By using FESTA's (Festival of Transitional Architecture) grading system of sources of materials we have four major categories;

- End of Life - Materials that can no longer be used in its original function because of wear, tear or age.
- Construction or Demolition Waste - Materials left over from construction, demolition and renovation projects.
- Dead Stock - Outdated materials that is no longer manufactured or no longer has repair or technical support.

- Production Waste - Residual materials from industrial production processes, including materials and components that fail quality control.

It is a reflection of five years' worth of Bachelor of Architectural Studies, second year architectural students working in two locations Christchurch and Auckland, New Zealand. Students create large scale prefabrication pavilions, within the context of a live project to reactivate the city centres spaces. Albeit that four of the five years' worth of projects were located more than 1000km from the students Institute, indeed this created a complex, logistical dilemma to ensure that students would follow the principals of sustainability, and incorporate aspects of social innovation, to ensure they followed the tenets of zero waste and zero budget.

2012, 2013, 2014 saw the department partner with FESTA (Festival of Transitional Architecture) which is based in Christchurch and Studio [ ] Christchurch which is a collaboration of Christchurch Polytechnic Institute of Technology, Victoria University of Wellington and University of Auckland, to create 2012 LUXCITY, 2013 Canterbury Tales, 2014 City Up's. In 2016 Lean Mean's is primarily a collaboration with FESTA and Jos de Krieger from Superuse Studios Amsterdam who is to be the Creative Director of Lean Means , due to be installed late October 2016. In 2015 the department collaborated with Artweek Auckland, Devonport Business Association, and Pānuku Development Auckland, to create Glow@Artweek Auckland on two sites within the Auckland Isthmus, however in 2016 Glow@Artweek Auckland is on a one site, this in part is due to the 2016 offering already being split with "Lean Mean's" in Christchurch and Glow@Artweek Auckland being in Auckland.

From the outset Christchurch City, and in particular its residents already have a formidable notion of sustainability no doubt in part to the extremely conscientious behaviour of Christchurch residents after the buildings had largely been demolished in Christchurch and disappeared into vast landfill projects, after the earthquakes of 2010 and 2011. The 'volume be that of equivalent of around 20 years of normal municipal solid waste.' some 4.25 million tonnes including more than 1000 CBD buildings within Christchurch. Whereas when Glow@Artweek Auckland a similar zero waste and zero budget parameter driven project was created, notwithstanding the trials and tribulations of being on either sides of the harbour district, for some aspects the Auckland location was more challenging to achieve sustainable practices than the Christchurch sites. Mostly due to the concept of zero waste being not being at the forefront of most people's minds, within the Auckland context.

Christchurch, since the earthquakes of 2010 and 2011, has truly embraced the concept of zero waste, this is particular evident in the Whole House Reuse Project, instigated by Juliet Arnott and Rekindle. Rekindle is a social enterprise focused on reducing wood waste, primarily by making furniture and other objects of beauty and usefulness. This project was based around a 1930's wooden house which was professional salvaged and deconstructed over nine days Aug-Sep 2013 . Four hundred and eighty typologies of materials were made available for approximately 250 people to invent ways to reuse; chairs, jewellery, furniture, toys. There are of course many other examples such as the Pallet Pavilion and Urban interventions in Christchurch, and the hugely popular Gap Filler urban projects, all of which are heavily documented.

The Architecture Department has a long history of running social innovation live build projects which have their roots in sustainability, The Studio 19 project run in conjunction with SGA (Strachen Group Architects) has been running since 2012 and was particular successful with the VisionWest Community Trust – Community Housing. The trust provides emergency, transitional and long-term supported Housing in West Auckland. The aim is to provide safe, healthy, affordable, quality housing for low-income families. Beyond the provision of housing, VisionWest provides opportunities and resources for support in all aspects of the tenants' lives, including a Social Worker, Community Chaplain and the other wrap-around services of VisionWest. This ran in a number of iterations up to 2015 and was largely run within the third-year studio component of the Bachelor's programme.

Throughout the proceeding years of these live prefabrication projects, the students have made some good inroads into sustainable practice including;

2013 Canterbury Tales; Team Illuminate, had a novel tectonic hexagon, not looking dissimilar to the Millennium Falcon in Star Wars. Construction of these expanded hexagons was made from plastic oversize straws which had BBQ skewers for structural integrity inserted in the core and a mini LED light holding the two portions of the hexagon apart. This made for an extremely flexible unit which when prefabricated in Auckland before shipping to Christchurch created the ability to very quickly attach modules of these polygon structures together which meant for relative ease of construction. All FESTA projects have only needed to withstand public scrutiny for one night but challenges are always to be had in the timeslots for when the sites become available – often only days before the actual date. The light weight nature, of these modules meant that holding them in a cloud like structure from Cherry Pickers (hydraulic crane, with a platform attached) which could move up and down depending on the wind strength meant that it was an extremely successful project – simple but very flexible. The ability for the student group to critically think their way through the problems is a great example of critical thinking as purported by (Dunne & Raby P35) "We are more interested in critical thinking, that is not taking things for granted, being sceptical and always questioning what is given." Overall this project would be described as a combination of "End of Life" and "Dead Stock" materials.

2014 City Up's had one team I.N.G. (Inspire, Nurture, Grow) which decide that they wished to use plastic bottles, as the nature of mass produced repetitive items appealed to them. On researching a company in Christchurch they found one which had some which had numerous spare bottles, unfortunately as is the nature of these thing the company went bankrupt some weeks before "pack in". However luckily Coca-Cola Amatil came to the rescue as they had 30,000 sports drink bottles which were not able to be used to public consumption, and they were due imminently to be shipped to landfill in China.

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[3] ARNOTT, J. & MCINTYRE, K. (eds.) 2014. Whole House Reuse: Deconstruction: Rekindle, Christchurch



Figure 1. 2013 Canterbury Tales Team Illuminate – photograph Annabel Pretty

An agreement was reached between the student group I.N.G. and Coca-Cola Amatil such that the bottles would take a detour to Christchurch, be used for the live project and then crushed by the students and the debris bottles would continue their way to China landfill. Of course not ideal that they were going to landfill but eminently sustainable as they were upcycled and ultimately did not go to Christchurch's landfill. A relatively simple structure was made from plastic garden fence mesh, the group researched the ideal square hole size to coincide with the neck of the bottle with some minor modifications they were able to feed the neck of the bottle through the mesh and re-screw the bottle lid on, since they were only filled with air albeit weighty the entire structure was still able to be strung of the 10m x 12m scaffolding frames or rather as a Theatre's Proscenium arch. This project was most definitely an example of "Production Waste".



Figure 2. 2014 City Up's I.N.G. (Inspire, Nurture, Grow) photograph Annabel Pretty

2015 Glow@Artweek Auckland "live project" was premised around the notion of reinvigorating two diverse sites within the Auckland isthmus, via the use of "light pavilions" or Architectural installations, which would need to have a "day time structural presence" and a "night time ephemeral light presence". Unlike the previous offerings in Christchurch of a one night only situation, these projects were held over a weekend and covering three nights, thus structures needed greater longevity than in previous FESTA projects which only need to last one night. The one site on the North Shore, in a largely Edwardian villa typology; Devonport. The other in an urban regeneration area on the southern shores of the Waitematā Harbour covering the area of reclaimed land known as Silo Park Wynyard Quarter. Both sites covered a divergent set of intrinsic problems, the northern site largely residential, grassed and surprisingly windy during the October period, and the southern site very urban with very little by way of forgiving materials, a preponderance of concrete and an imperative that no object could pierce the "impermeable" membrane 200 mm down due to chemical leaching, from the former petrochemical silos.

2015 Glow@Artweek, Windsor Park Devonport Team Orb's idea was to upcycled paper lanterns and plastic utensils, (in particular plastic cutlery) to create a Christmas bauble like effect. The paper lanterns albeit a good genesis of ideas especially in regard to recycling, unfortunately since they needed to last the three days' winds and rain lead to a softening of the structural integrity of the orbs such that were rather asymmetrical at the end of the festival. Though hung from a scaffolding structure with the close proximity of the trees it was largely hard to determine if the orbs were hanging from the trees or not. Keeping within the zero waste zero budget these were re-used for Christmas decorations in Devonport 2015. This project would be described as a mixture of "End of Life" and "Dead Stock".



Figure 3. 2015 Orb photograph Annabel Pretty

2015 Glow@Artweek, Silo Park, Wynyard Quarter Team Al- Noor, this team early in the piece decided to design their live build project pavilion around, off-cuts of a building wrap material. The core idea, since they were largely a group of Pakistani and Bangladeshi students was to create a concept of Al-Noor - Arabic for Light. The building wrap designed in Wellington is a continuous 3D printed architectural mesh, both which can be used as an external building wrap and as an internal space divider; branded as Kaynemaile. The company gifted the student's narrow strips approx. 800mm by up to 1200mm in length which could not be reused within the company due to the small size. The students soon found that due to the type of plastic used and the intrinsic flecking when heated up gave off a type of phosphorescence, although the original idea was to hang this cloud like structure from a scaffold system this proved too complex in terms of council permits and thus the draping them over the one ton McCallum blocks (one-ton construction blocks) was the resultant project. A rather ground level cloud. Al-Noor's project would be described as an example of "Construction or Demolition Waste".

[4] NINETEEN, S. 2013. Social Housing Project - Studio Nineteen [Online]. Available: https://2012studio19.wordpress.com [Accessed 24 August 2016].
[5] DUNNE, A. & RABY, F. 2013. Speculative Everything: Design, Fiction, and Social Dreaming



Figure 4. 2015 Al-Noor photograph Annabel Pretty

All of these live projects have been constructed around the same premise that of a twelve-week studio programme within the second year programme, although to meet the Australian and New Zealand Architecture Program Accreditation Procedure (ANZ APAP), and the National Visiting Panel (NVP) a rigorous appraisal of all Studio Projects / Briefs must be maintained in order to achieve the NVP requirements and guidelines. Especially as every year the External Examiners go through all briefs at all five years with a fine tooth-comb to analyse the depth of knowledge and skills gained so that each programme accredited within Australia and New Zealand has parity of learning outcomes, and student profile. Hence it meant that at around week 6 to week 10 students concurrently needed to engage in another project normally a mixed-use housing or small co-housing project, this also coincides with students having submitted the drawings to engineers and local council authorities to get either notified consent for a temporary structure or non-notified depending on the parameters of the student project. Summative assessment throughout the last five years has consisted of a mixed approach to assessment where students self-evaluate the group and themselves which contributes to roughly about 30% of total grade and 70% is assessed by the studio lecturers. The students who self-evaluate highly then get ameliorated by the lecturing staff assessment, thus an overall fair grade is achieved. Those students who do not participate and engage at the same level of other students often get heavily penalised by their peers during the marking process, students are not afraid to give their peers poor grades if they are perceived as not engaging within the design process, or the construction phase.

Sweden Context

Department of Design, Bachelor of Arts – Year 3 Linnaeus University Subject- Speculative Design, Theories, Literatures

The Department of Design, Linnaeus University, Sweden, educates students at Bachelor and Masters levels in Design throughout multiple programmes offerings. The core value of sustainability permeates all programmes and the students are accepted through a specific admission process which involves portfolios and interviews. The Department of Design has 300 students and 30 members of staff, representing a range of disciplines: product design, graphic design, textile design, architecture, fine art, sociology and culture studies. The department also depends on a large number of guest lecturers for specialist input relevant to the variety of courses, thus ensuring international perspectives. The university also facilitates student and teacher exchange through a number of international agreements, and the Department of Design is a member of Cumulus Association, the International Association of Universities and Colleges of Art, Design and Media.

The course described within this context forms part of the Bachelor of Fine Arts programme, Design Programme ¬ specialisation Sustainability, 180 credits total over three years:

"Social and cultural changes require a new approach to design and thus new roles for the designer. Therefore, Design is targeting sustainable development, on a humanistic social scientific base. It involves a holistic approach, which requires that the method and theory responds to today's challenges with high demands on sustainable development. Type of education therefore aims to promote design processes, whose cultural, ecological and long-term economic conditions based on theories aimed at human welfare in every sense". (from programme documentation)

Learning Outcomes and Context

The three courses which run parallel are design practice, culture studies and academic writing which are all part of the "design project". These courses bring together theory and practice and the students are encouraged to develop individual projects during the course within areas they want to specialise within. The programme is a broad-based design programme and students get to work in the first year in a variety of traditional design fields as product design, graphic design, spatial and little by little our students "mix their own cocktail" of definition of being a designer.

After completing the course, the students are expected:"to show a deepened knowledge and understanding of the sustainable perspective as a part of the design process.

to apply in practice theories and methods founded on social, economic and ecological conditions promoting sustainable development".

From the cultural studies perspective, the lecturing staff wanted the students to have acquired the ability in writing and verbalizing, the programme which is taught in English, to understand the sustainability concept from a humanistic and societal perspective. When they have completed the course students are expected to be able to critically examine and problematise design concepts from sustainable macro and micro perspectives. Within the perspective of academic writing the students were challenged to understand how knowledge is created within artistic as well as scientific contexts and how to articulate, and evaluate, the design process via a self-reflective report.

The course explored what design for sustainable change can potentially be, especially focusing on the cultural and social dimension of sustainability. Within the programme we also introduce them into new fields of design such as service design and speculative design. The students within this course had to experiment within speculative design last year, which helped them to understand how we can use speculative design as a method to see what design could be doing today to create more sustainable futures. Dunne & Raby "use design as a medium to stimulate discussion and debate amongst designers, industry and the public about the social, cultural and ethical implications of existing and emerging technologies."

Methods and Pedagogy

The iteration of this course occurred during the academic year 2014/2015, and took place within the framework of "Future Living for the Elderly" with the subtitle of speculative design. This was the first time the staff group had included speculative design within this course whereas we usually just work with ageing paradigm. The reason why we have chosen the elderly approach alongside the speculative design last year is due to the collaboration within the DESIS Network (Design for Social Innovation and Sustainability Network) which started by virtue of the largely ageing populations around the world, especially within the European context. "Up to 2060 the population of Sweden is expected to increase by roughly 3 million persons, amounting to 12.9 million. Today our population is 9.7million."

The course is international in its make up, and has students from many corners of the world. Last year we were thrilled to receive students, including those from our Swedish programme students, from Mexico, Turkey, China, Ecuador, Great Britain, Germany. These students from abroad tell us they have applied to our programme to more deeply engage with sustainability. Sustainability is global phenomenon and it would be difficult to separate it from a holistic approach in all levels. One book which is used by the lecturing staff is The Designer's Atlas of Sustainability, by Ann Thorpe, on the grounds that it works for both students which have experienced sustainability and for those who have not; "The book tackles not only the ecological aspects of sustainable design-designers' choice of materials and manufacturing processes have a tremendous impact on the natural world-but also the economic and cultural elements involved".

In the end of the course we can see how the students have broadened their perspective by learning together with students from different cultures. The teaching team was formed of four educators from different disciplines. Design, Architecture, Fine Arts, Pedagogy and Culture studies. They worked closely together and participate in tutoring, workshops together so theory and practise get fully integrated within the projects. The group of elderly "clients" came in once a week and engaged with the students through talking about themselves and the student projects.

The research phase consisted of lectures, field trips and workshops. The students were introduced to emerging design fields and methods for research. Besides scheduled activities the students were expected to drive their own research and explore, in this case, the field of ageing and future living. This was followed by a weeklong scenario development on the topic "A day in your life in the year 2070" which formed the context for their projects. During the longest phase of the course, five weeks, students realised their individual design projects. Based on their scenario the students developed one design project focusing on future living of the elderly. The projects were supposed to be visionary, speculative and focus on sustainable futures. As part of the course, students also had an orientation in service design and how to use it to realise the project ideas. Individual tutoring was provided during the whole process with one or several educators within practice and theory. The theories to support the student project were chosen together with tutors and therefore quite individual due to the need of every specific project. The first part of the project ended with a presentation, where the students received feedback from both educators and peers, giving critique and pointing out possibilities in the projects. The last part of the course focused on developing the project further according to the feedback and also to look into innovation, feasibility and how to communicate the content. The course ended with a presentation which people from the target group, retired people, attended. The course was part of the DESIS Network (Design for Social Innovation and Sustainability) cluster "Ageing & Ingenuity", which is set up to investigate design approaches that address the full spectrum of challenges around ageing. Dr Yanki Lee, who is working at Hong Kong Design Institute (HDKI), is the coordinator of the cluster and every year she holds a lecture by skype to present how HKDI work with action research within ageing.

Results

Through the following assessment criteria, the group of educators check that the students have:

- Chosen clearly formulated problem that is realistic for this educational level
- Worked with the support of good knowledge and an over view of current international development within the area chosen
- Created an artefact /or service/ of good quality, answering to the requirements of sustainable development
- Created an artefact answering to people's needs and living conditions
- Contributed with a personal artistic expression and/or technical innovation to the product area

Projects last year went into many different directions where some had been focusing on the speculative approach and others on living for elderly. The following case studies exemplify some examples where the students made speculative design project which hopefully will make us take actions today, for the future.

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Pilot for New Education

This iteration of the course has been a pilot for a course in a new education called Design+Change that started last year, 2015. In 2010 a merger with Kalmar University and Växjö University and thus it was necessary to reorganise our educational offerings. In this new education we have implemented the best experiences from this program into an international program at bachelor level. The new program has international students at all levels, new field of design, as speculative design, take a greater part in this new program together with service design, meta-design, amongst others.

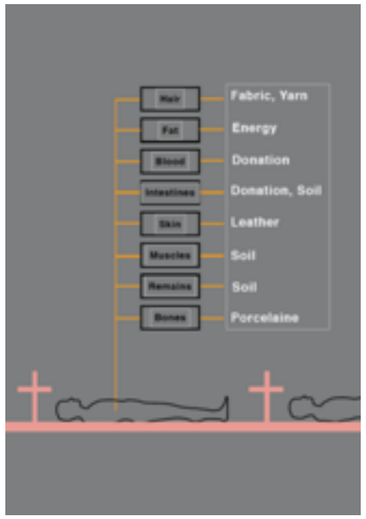


Figure 5. Permission for reproduction from student

“Deadline” by Jennie Söderlund

“Aging is a process towards death and all that lives eventually die. In the future the population in Sweden are going to increase, and so also the amount of dead people. Today there is problems with overcrowded cemeteries abroad and there are new more sustainable concepts available, but the burial traditions are strong and the changes go slow. This project is to open up for discussion about the burial traditions today and what we can have in the future. I created Deadline, a speculative design concept for handling dead bodies year 2070. Deadline is a human recycling system which every citizen ends up in. The goal is to recycle the entire body after death of a human. By doing this in a sustainable way, the dead body is no longer a waste, it can instead contribute to new materials, energy and products for those still alive”.



Figure 6. Permission for reproduction from student

“Welcome(?) to 2017” by Ellen Ekström

“The present generations of older women may more commonly experience aspects of deprivation; indeed, the feminisation of later life has led to a widespread attitude to older women of being socially invisible and of leading a tucked-away life of little impact to public life.”



“Connect kit” by Johanna Runesson

“Connect kit” by Johanna Runesson

“To make a speculative design project that will provide discussion about how far we are willing to go in the technological development, an instruction movie has been created. The sender of this film is a company called Connectcorp that has launched a revolutionary kit containing lenses, earplugs and a chip that will be connected to an elderly’s body which will receive internet twenty-four-hours a day in her/his body. As a result, it will be possible to connect the elderly to other technical devices through Wi-Fi. This will facilitate the care take business since the age-group 65 and over will in the future increase. Also, connect kit will improve and facilitate connection in distance, both for relatives and companies, due to a hologram that will create the feeling of almost being able to touch the one you are having a conversation to.”

	Sweden	New Zealand
Programme length	3 years undergraduate	3 years undergraduate
Week length of brief	12 weeks	12 weeks
Semester out of total in which studied	Fifth semester out of six	Fourth semester out of six
Number of students	16	Between 90-120
Percentage of Citizen’s or Permanent Residents	62%	Between 50%- 58%
Percentage of International overseas students, non-permanent residents	37%	Between 35%- 40%
Percentage of Exchange & study abroad students	0%	Between 7%- 10%
Number of tenured lecturing staff teaching	4	3
Number of Sessional staff, Industry professionals, Practicing Architects teaching	0	3-4

Table 1. Comparison of Teaching Parameters between Countries

Conclusions

The courses chosen from these Institutes both share qualities of sustainability however their defining qualities suggest that the New Zealand one is a tangible outcome based one whereas the Swedish one is very much more speculative and conceptual in a non-realised way. The New Zealand one is hands on; about making and practice how the design process is working from start to finish, the iterative process. The students are interacting with a variety of stakeholders at every step, from the café owners and stall holders to the engineers and council approval bodies. The final outcome is disseminated by the public, during either a festival or during the Artweek paradigm. Students receive feedback regarding their designs from all members of the public, mostly within the positive sphere and not the negative, once the students explain the concept. Sustainable in many ways, most certainly in an ecological and economical way. As Volkmann states (P119) “Compelling design pedagogy must combine the ephemeral and the concrete. The students understood early that the visionary idea could only be as good as its concrete realisation.”

The Swedish paradigm, is working within a new design field; speculative design. The students are able at the completion of the course to use speculative design as a method to create awareness of current societal issues. The target group or clients were older people and they have been actively involved through the course. The course ends, after examination, with an exhibition for the elderly. The Swedish one is very much based on Dunne and Raby’s (P57) Functional Fictions “the brief does not start with a problem or need but instead asks students to identify a specific area of science research, then to imagine issues that might arise one the research moves from lab to everyday life, and finally to embody these issues in a design proposal aimed at sparking debate or discussion. The project is about using design to ask questions rather than providing answers or solving problems.”

Setting grades are quite differently applied, in New Zealand, they use a mixed model of studio lecturing staff, and student self-assessment. Typically, six staff within this cohort (120 or so students), plus internal moderation and external moderation by the External Examiners (External Examiners are appointed by ANZ APAP, one external academic and two practicing Architects) at the end of the year. Whereas in Sweden the combined group of Senior Lecturing staff grade, and then moderate the student projects.

In both Institutes, these courses have run for a number of years, although often slightly modified, on a year by year basis. The Swedish course will just run for another year due to the merger with Kalmar University and Växjö University. This course has therefore been used as a pilot for the new programme, where the new design disciplines will have a larger impact within the new educational programme.

It is clearly apparent that both the Swedish and New Zealand paradigm have enormous value to the students. Both sets of students must be prepared to understand the iterative design process, and they also have needed to learn new ways of dealing with sustainability and to make relevant projects for a municipality, NGO or business. For the Swedish students, reusing or prolonging the life of a material would not be considered a sustainable practice, however a sustainable project would be considered, if it created a new system for prohibit materials to go to landfill, hence perhaps the use of the speculative project, as the parameters would be too vast for a 12-week project. This context is quite different to the New Zealand one, which is neither designing products, nor being speculative but is building within the temporal nature of products on their way to landfill. The process of reflection, on which the two authors have heavily discussed and reflected on the different modalities of the two programes, has crystallised dissemination of this exchange of knowledge, to each other’s programmes. Despite both however have a differing resultant end-point they both have embedded within the process, the design iterative aspect; communicating the intent of the project, that of Learning by Planning.

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A serious game prototype design for social advocacy – using the air pollution of the six naphtha in Yunlin as an example

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ABSTRACT

In order to solve the lack of petrochemical raw material in Taiwan, Yunlin County decided to build the sixth naphtha cracking plant, known as Six Naphtha, which now produces the largest amount of petrochemical in Taiwan. Since the Six Naphtha began operating, the overall air quality has worsened, along with the rise of cancer rate, becoming significantly higher than before. This research advocates the issue of Yunlin's petrochemical industry air pollution, through designing prototype serious games for mobile devices. This application would integrate with the geographic information system (GIS), provide user air pollution related digitalised information, enable users to obtain and have a better understanding of air pollution issues. In this study, first, we collect Yunlin air pollution related survey data and data analysis documents as the game's primary data. Then, invest in the geographic information system (GIS) for air pollution, to support this study. Finally, analyze digital game cases' and associated documents. After, designing the prototype based on the principles has resulted in an application explained below. The application is strategy type games, where players will have a deeper impression of the game though reflection and solving problems. With the use of geographic information system (GIS) for air pollution, real and immediate information will make the game more convincing. Game mechanism can be reflected in real life, such as sharing air pollution advocacy messages to get more bonus points in the game. Through the virtual and real world interaction, the game will be able to influence everyday life.

Keywords

serious game, Geographic Information System (GIS), industrial air pollution

INTRODUCTION

Air pollution is an inevitable byproduct of the rapid industrial development in Taiwan. In order to solve the lack of petrochemical raw material in Taiwan, Yunlin County decided to build the sixth naphtha cracking plant, known as Six Naphtha, which now produces the largest amount of petrochemical in Taiwan. Since the Six Naphtha began operating, the overall air quality has worsened, and the prevalence of cancer has increased concurrently with the rise in industrial operating times (Chan, 2009). Local governments have ratified numerous regulations in their efforts to prevent and control air pollution. Many environmental protection organisations have also emerged in society for the same cause, such as the Yunlin Coastal Aquaculture Association. The petrochemical industry has severely affected the coastline of Yunlin, damaging both the ecology and other industries. The Yunlin Coastal Aquaculture Association is dedicated to preserving the local aquaculture industry. Industrial air pollution (IAP) significantly affects social environments. In response, people have begun advocating the impact that air pollution has on health, industries, ecologies, policies, and even life safety. Advocacy aims to encourage groups, societies, and individuals to change existing social structures and policies and promote social justice (Toporek, Lewis, & Crethar, 2009). Social advocacy refers to the promotion social justice and fairness in a variety of forms to resolve social problems. IAP affects conventional industries and local residents. The present study aims to expose relevant problems to stimulate increased discussion and awareness. To achieve this goal, these problems must be advocated through different channels and non-mainstream media outlets. Serious games enable the delivery of skills and knowledge and the promotion of ideas and attitudes through gaming. Such games also reflect real life (Bergeron, 2006). A keyword search on serious games revealed that the majority of Taiwanese studies on serious games are centered on education. Only a handful of studies were focused on social advocacy.

The social advocacy of air pollution is crucial for understanding the air quality in Yunlin. Geographic information systems (GIS) are a widely used technology. Users are able to access the air pollution information on their mobile devices to view the Pollutant Standards Index (PSI) and carry out the necessary protection measures before heading outdoors. The purpose of serious games is to teach users or even persuade users, to change specific life actions. GISs enable users to retrieve air pollution information instantaneously. Real data and gaming elements can be combined to enhance the persuasive power of social advocacy. Therefore, the present study examined the following problems:

(1) What type of content is associated with the social advocacy of air pollution in Yunlin? (2) How can the air pollution data retrieved from GISs be incorporated into games? (3) How can serious games be used for social advocacy?.

According to the survey conducted by the Market Intelligence and Consulting Institute (2015), 70% of gamers play games on their mobile devices. Information can be rapidly disseminated via mobile devices, which is extremely beneficial for social advocacy. Therefore, the presents study developed a serious game for the mobile device platform. Prior to software development, a keen understanding of the relationships between air pollution advocacy, Yunlin's environment, and serious games must be established. Then, through meticulous game designs and mechanisms, air pollution awareness can be advocated, encouraging the public to take physical action in resolving air pollution and other social problems. Moreover, games can also deliver messages in an easy-to-understand form to players that do not understand or unconcerned with relevant issues. The objectives of the present study are as follows: (1) To elucidate the application of serious games in social advocacy and the correlation between serious games and social advocacy; (2) To combine air pollution problems and GISs to create a mobile game; and (3) To achieve the social advocacy of the air pollution of Yunlin through gaming.

First, data concerning the petrochemical industry and air pollution in Yunlin were collected. The data were examined based on the existing digital social advocacy approaches to establish the advocacy content and goals. Existing domestic and foreign GISs for air pollution were analyzed to collate favorable geographic and attribute data and data presentation methods for gaming. Social advocacy was implemented in the form of a serious game. Therefore, the design specifications and persuasion mechanisms of serious games were analyzed. The results were carried forward to an analysis of social advocacy cases using serious games. The case study produced the features of advocacy using serious games, which were referenced in the design of a serious game prototype.

The prototype was designed for the Android platform. The GIS selected for the retrieval of the air quality data was the OpenData Database launched by the Environmental Protection Agency (EPA), Executive Yuan. The air pollution data advocated within the game was retrieved from the Taiwan Emission Data System (TEDS) operated by the EPA. The emissions lists archived in TEDS are calculated every three years with local updates throughout the year. Because the present study focuses on developing a serious game for mobile devices and using the persuasion of social networks to achieve social advocacy, frequent users of social media and mobile games were selected as the research subjects.

Yunlin's IAP and Social Advocacy

Yunlin has become challenged with air pollution since the launch of the Six Naphtha. Tsuang (2015) analyzed the PM2.5 (particle matter smaller than 2.5 nanometers) emissions data in 2007 recorded in the TEDS and ordered the stationary sources in Taiwanese industries and found that the Six Naphtha had the highest emission volume. The World Health Organisation (WHO) characterised PM2.5 as a Group-1 carcinogen, stating that regular exposure to PM2.5 increases the likeliness of developing respiratory diseases, cardiopulmonary disease, and death. The Six Naphtha has reduced the average lifespan of Taiwanese citizens by 44 days, with Central Taiwan being the center of influence, reducing the average lifespan of residents in Yunlin, Chiayi, and Nantou by 100 days.

Moreover, the number of cancer cases in Yunlin has increased exponentially after the launch of the Six Naphtha. Statistics of the Mailiao Township in Yunlin County showed that the mortality rate increased exponentially in the 1st to the 3rd year of operation compared to previous outcomes. The launch of the Six Naphtha also negatively impacted water quality (Chan, 2009). Lin (2009) conducted in-depth interviews with residents in the Mailiao and Taishi Townships of Yunlin County and found that the majority of residents believed that the Six Naphtha is a negative influence on the environment. Aquaculture farmers claimed the adhesion rate of oyster seedlings have drastically declined, affecting cultivation. The pollution problem caused by industrial operations in Yunlin has progressed to the point that it has violated the health, industrial, and ecological rights of the residents. To resolve the air pollution problem in Yunlin, advocators and advocacy organisation have adopted a number of approaches to express their concerns to the public, government, and enterprises. Based on means and content, the recent social advocacy of the air pollution in Yunlin is tabulated in Table 1.

The objectives for the advocacy of the air pollution in Yunlin are as follows: (1) To raise public awareness on the effects of air pollution in Taiwan and impart air pollution knowledge; (2) To encourage more people to take action against social issues; (3) To improve industrial problems and urge enterprises to show tangible improvement through advocacy; (4) To supervise the government and appeal to central and local authorities to formulate and amend relevant laws and regulations; (5) To reduce and improve health issues by disclosing evidence of the health problems caused by air pollution in hopes; and (6) To protect the industry and ecology so that future generations can appreciate the beautiful scenery and enjoy sustainable development. Currently, advocacy has been implemented in a variety of form, including parades, publications, broadcasts, websites, social media, media, and exhibits. However, advocacy on air pollution in the form of games is rare.

Name	Means	Content
Mask Off! Look for Blue Sky (2015)	Media, Internet, Social Network, Forum	Films by numerous directors to help viewers understand the severity and prevention measures of air pollution
Southwind (2013)	Media, Website	A series of greyscale images portraying the influences of the Six Naphtha on the health, industry, and ecology of the surrounding area
Since the Six Naphtha (2012)	Website, Broadcast	A blog dedicated to the news, information, and policies of the Six Naphtha
Heaven (2008)	Media	A film on the influences of the petrochemical industry on health, industry, and ecology
Health, Childcare, and Anti-Pollution (2016)	Parade	A parade to raise awareness towards the pollution created by the Six Naphtha and its influence on health and the industry

Table 1. Summary of the Social Advocacy of Air Pollution in Taiwan

Air Pollution GIS

GIS integrate domains of geography, information, and systems. Geography refers the realistic representation of space, and information refers the messages contained in the space, and systems refer to the calculation and analysis of the space using various technologies (Bonham-Carter, 1994). Zheng (2011) mentioned that GISs integrate, explain, and archive different dimensions of spatial information. GIS operations include the retrieval, calculation, analysis, application, and visualisation of information. The preceding discussion shows that spatial data and attribute data are system content. Digital devices are the tools provided to users to process and reproduce the data. Air pollution GISs is largely applied to predict the weather. However, they are now being used to remind the public of environment crises as air quality gradually degrades. Li (2008) examined the increasing severe air pollution in Kaohsiung and developed the Web GIS – a system with the capacity to analyze air pollution. The researchers aspired to enhance the accuracy of reducing air pollution using GIS data, thereby helping the government conserve funds. Fisher (2006) employed an air pollution GIS to investigate environmental justice and elucidate the influence that the increasingly severe industrial air pollution in California, USA, has on local residents. GISs is capable of producing visual renditions of real-world information that are easy-to-understand for users. For social advocacy, GISs can directly and transparently present facts.

In air pollution GISs, the spatial data establish the region for analysis while the attribute data represents the air quality in the region. Currently, the Air Quality Index (AQI) is widely used to evaluate regional air pollution conditions. The Taiwanese EPA uses the Pollutant Standards Index (PSI) and the PM2.5 Index to measure air pollution. Table 2 presents various domestic and international air pollution GISs and their spatial data, attribute data, system platform information.Because the Taiwanese EPA provides both PSI and PM2.5 standards, the air pollution GIS in Taiwan uses two sets of data. Color also has significant meaning in air pollution attribute data. PSI, PM2.5, and AQI use a color scheme to represent the severity of air pollution. Thus, dull colors are typically applied to spatial data and maps to highlight the classification colors of the attribute data. In terms of functions, GISs typically contain information that directly impact the user, such as links to air pollution information and health information and connections between air quality level and health.

Serious Games in Social Advocacy

Serious games refer to digital games that deliver information and knowledge to players. In other words, the primary goal of serious games is not relaxation or leisure (Yeh & Song, 2004; Bergeron, 2006). Susi, Johannesson, and Backlund (2007) asserted that players seek entertainment when they play games. However, serious games place a greater emphasis on problem-solving models and simulations. Zyda (2005) argued that the education significance of serious games is established on gaming, and therefore such games should be focused on leisure and entertainment. Huang (2013) characterised serious games into three domains, namely, learning, gaming, and simulation. Serious games are widely used. They also contain different game mechanics and designs and are suitable for different platforms depending on the purpose of the game.

Name	Spatial Data	Attribute Data	Representation of Attribute Data	Platform
Taiwan Air Quality Monitoring Network (2009)	Taiwan	PSI; PM2.5	Point	Website
AirNow (2002)	USA	AQI	Dimension	Website
Aqicn.org (2008)	Global	AQI	Point	Website; Mobile device
Suspended Particles - Taiwan (2013)	Taiwan	PSI; PM2.5	Dimension	Mobile device
J-Haze (2016)	Taiwan	PSI; PM2.5;AQI	Point	Mobile device

Table 2. Domestic and International Air Pollution GISs

Serious games aim to influence users. Therefore, the design of such games is relatively different to conventional digital games. Gouglas and Hackman mentioned (2015) that a crucial element of serious games is the equilibrium of message conveyance and game attractiveness. The over-emphasis on issues and concepts can sometimes cause unexpected negative outcomes, and the over-emphasis on entertainment may dampen the messages that are conveyed. In this context, Yeh and Song (2004) characterised the design of serious games into the following items: (1) Challenge: Games should maintain an appropriate level of difficulty to keep players interested; (2) Harmony: Game content must be inspected to ensure that players resonate with the gaming process; (3) Entertainment: Serious games are essentially games, and therefore entertainment is a crucial element of serious games. The persuasion of users and changing their daily habits and views through gaming typically follows a specific discourse, from initial motivation to playing the game, to understanding the content, and finally to changing the user. Klimmt (2009) presented the following arguments on the persuasion mechanism of serious games: (1) In addition to interest in the topic, the novelty of the game enhances the motivation of users to learn new information. (2) Games typically contain specific mechanics to immerse players into virtual scenarios. Messages can be visualised in these scenarios to facilitate users in acquiring and understanding knowledge. (3) People are less likely to reject virtual content and more likely to incorporate such content into the real-world, consequently changing their attitudes.

Serious games are able to change player attitudes through story plots. When delivering game objectives, designers should consider the attractiveness of the game.

During development, these game objectives should be revalidated to ensure that they are not ignored. Repeated inspections should also be performed to identify the optimal gaming method.Table 3 shows that the majority of serious games are in the form of strategy games. The games enable players to simulate problems and incorporate story plots in the attempt to resolve problems and reinforce players learning ability. The games also use real-world elements to provide an immersive experience for the players. This

corresponds to the design characterisation of harmony and the persuasion mechanism that changes players' attitudes proposed by Yeh and Song (2004). Social connectivity is also a crucial element. It not only enhances the rendering power of the game but also opens narratives, which are both essential for social advocacy. In addition to the conveyance of concepts, the capacity to change players and the society is an important step in social advocacy. Thus, the design of effective game mechanics is essential. Designers can also consider collaborating with multiple parties, such as governments, profit-seeking organisations, non-profit organisations, and players, incorporating collective efforts into developing a game with favorable gaming mechanics to generate influence continuously and sustainably resolve social problems.

Name	Advocacy Content	Genre	Key Design
Sweatshop (2011)	Child labor	Strategy Game	Simulates poor work environments; offers social sharing
Darfur is Dying (2009)	War	Strategy Game	Integrated with real conditions; users are able to access countersigning websites in-game
WeTopia (2011)	Rural children	Strategy Game	Game rewards can be used in the real world; corresponding donations help rural children
Tree Planet (2014)	Environmental protection	Strategy Game	Combines social networks and game mechanics with the real world; trees that are planted in the game are also planted in real life
Pipe Trouble (2013)	Petrochemical industry	Strategy Game	Simulates the balance between the petrochemical industry and the environment
Narco Guerra (2013)	Drug abuse	Strategy Game	Simulates the actual narcotics problem in Mexico
Protect President (2014)	Politics	Strategy Game	Corresponds to real-time protesting activities and utilises real-world elements

Table 3. Summary of Serious Game Cases

Based on the advocacy content of Yunlin's IAP, we investigated the air pollution GIS, collated existing digital games centered on advocacy, and performed a literature review to establish key game design elements. The design principles for the prototype are as follows: (1) Balance between seriousness and entertainment. Serious games can be characterised into two parts, namely, the game itself and content delivered. The prototype was designed to maintain the entertainment aspect of the game while delivering acceptable content to the public. Thus, easy-to-understand content was delivered during breakpoints within the game, such as the wait time during the startup or at the end of a level. The content present to the players involved (a) air pollution knowledge and the air pollution GIS, (b) emission volume of the Yunlin petrochemical industry, (c) advocacy of organisation connections and policies, and (d) effects of air pollution on health, ecology, and industry. (2) Symmetry between the game scenario and knowledge content. The air pollution GIS was incorporated into the game to provide real-time information to the user and enhance the game's persuasive power. The game scenario is also based on the actual location and elements of Yunlin. (3) Association between game mechanics and theme. The proposed game is primary a strategy game. Users engage in simulations or solve problems while playing the game to stimulate critical thinking and deepen their impression of the game content. (4) Continuity of social advocacy. Advocacy continues after the game ends. This is achieved through social connectivity, online marketing, and other mechanisms built into the game, rendering the proposed game a seed for the social advocacy of air pollution to influence societies in the real world.

Prototype Design

We developed a serious game prototype, "Purple Company," to advocate air pollution. "Purple" is the color characterised by the EPA for PM2.5 concentrations greater than 71μg/m3. The proposed game is a strategic tower defense game. Players assume the role of a business owner in the petrochemical industry, building factories in Yunlin that emit air pollution, consequently turning Yunlin into a purple zone. The game adopted an irony approach to help users understand the severity of air pollution. We aspired to utilise the prevalence of mobile devices and the popularity of mobile games to achieve advocacy. Therefore, the prototype was built specifically for mobile devices. Due to time limitations, the game is only launched on the Android platform. The advocacy objectives of the proposed game were to raise public awareness, garner public support, improve industrial problems, supervise the government, reduce health issues, and protect the industry and ecology. Information pertaining to air pollution was incorporated into the game using easy-to-understand slogans that players can read during breakpoints in the game. This enables users to gain a better understanding of the consequences of air pollution without sacrificing entertainment. Through the GIS, players can instantaneously view the air pollution conditions in Yunlin, which enhances the persuasiveness of the advocated content. Figure 1 illustrates the association between the design principles, game functions, and anticipated effects.

An incentive mechanism was designed to encourage users to share air pollution information (Fig. 2). Players that share information concerning air pollution and engage in social advocacy are able to receive rewards far greater than the rewards obtained by playing the game. We anticipate that this mechanism will inspire players to actively advocate air pollution to level up their abilities quickly in the game.

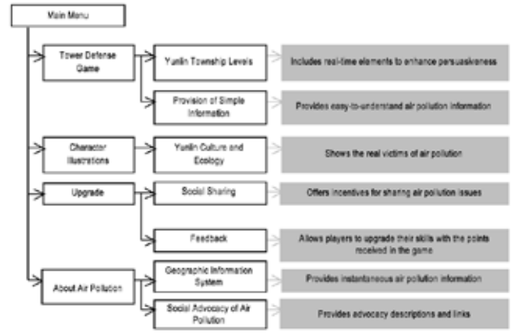


Figure 1. Prototype Framework

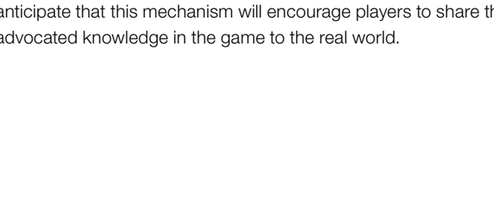


Figure 2. Incentive Mechanism

Gaming Process and Interface

The proposed game is a tower defense game. The gaming procedures are illustrated in Fig. 3. First, the main menu is presented with various levels in Yunlin Township. Once a level is selected, players enter the gaming screen. At the beginning of the level, players serve as factory owners, and they are required to place their factories within the planning zone. The cost of placing a factory varies depending on the amount of pollution it emits, where factories with a high pollution potential require more points to be placed in the planning zone.

Therefore, players must carefully consider cost, space, and factory scale. Once the planning is complete, the factories are placed in the planning zone and begin to emit air pollution. Non-player characters (NPCs) are repelled by the air pollution emitted from the factories. To pass the level, players must prevent all NPCs from reaching the factories and calling a strike. Finally, an easy-to-understand slogan that summarises the IAP in the region is presented at the end of the level, allowing players to acknowledge relevant issues quickly. Players are then offered the opportunity to share the advocated message in social media. If they choose to share, they are provided with double rewards. We anticipate that this mechanism will encourage players to share the advocated knowledge in the game to the real world.

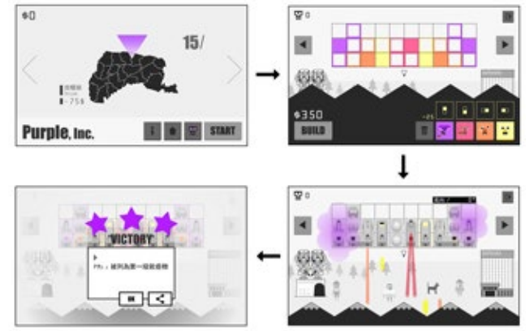


Figure 3. Gaming Process

The scenes within the game were designed based on the local landscape and buildings of Yunlin Township, and the NPCs are also designed with local cultural features, making the game more immersive. The PM2. The index is presented with a corresponding color scheme to show the severity of the air pollution. According to the PM2.5 Index data of the EPA, the corresponding colors for low, medium, high, and very high air pollution are green, yellow, red, and purple, respectively. We adopted the same color scheme into various game elements (e.g., color of the pollution emitted from the factories) to highlight pollution severity. The prototype also featured the air pollution GIS. It is not only part of the game, but also provides real-time air pollution information. The spatial and attribute data used by the system were that of Yunlin Township and the PM2.5 Index, respectively. They were presented in point form and highlighted with corresponding colors, facilitating users to acknowledge the severity of the air pollution immediately. Limited by screen size, the interface was designed in a simplistic manner. In addition to providing attribute data, the system prompts relevant slogans based on the level of pollution and the influences caused by the specific level of pollution, thereby reminding players to take appropriate precautions against air pollution.

Conclusion and Suggestions

In the presents study, we developed the serious game prototype, "Purple Company," for the mobile platform to advocate the air pollution caused by the petrochemical industry in Yunlin. The advocacy objectives were to (1) raise public awareness, (2) garner public support, (3) improve industrial problems, (4) supervise the government, (5) reduce health issues, and (6) protect the industry and ecology. The game comprised three major aspects, namely, the tower defense game, air pollution content, and GIS. The proposed game was a strategy game that helped players acknowledge the current industrial conditions in Yunlin and understand the problems caused by air pollution. The scenes and NPCs within the game were designed based on the local cultural features of Yunlin Township, making the game more immersive. The game also features an incentive system that encourages players to share advocated information on social media. The system not only promotes awareness on advocated issues but also provides players with in-game rewards. In terms of content, players are able to gain knowledge concerning air pollution while playing the game. The information is presented using easy-to-understand slogans during breakpoints in the game to prevent players from deterring from the game because of the seriousness of the issue. Through the air

pollution GIS, players can obtain the latest air pollution conditions in Yunlin, using real-time information to help them in the game. The attribute data of the GIS were those of the PM2.5 Index. These data serve as in-game reminders that encourage players to not only access the proposed application for gaming but also to view the latest information. Through the game mechanics and functions, players can play the game and gradually build interest towards air pollution issues and convert knowledge into action.

In subsequent research, we aim to conduct interviews to evaluate gamers and determine whether the proposed game complies with the design principles. The feedback provided by the interviewees shall then be used to revise the prototype and create a more comprehensive product that effectively advocates air pollution. In addition to the game, real-world activities, policies, and actions shall be integrated with virtual interactions to improve advocacy effectiveness and extend virtual advocacy to the real world. The current edition of the proposed game is only compatible with the Android platform. We aim to launch the game on the IOS system in the future. The serious game prototype for the advocacy of air pollution designed in the present study can serve as a theoretical basis for the development of other serious games for social advocacy.

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Design with public: a research of participatory approach in built environment

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ABSTRACT

The paper centers around the open design in the built environment stress on the participatory architecture which adopts the approach swift from designer-orientation to user-orientation, and corresponding standpoint from “design for people” to “design with people” in a goal to empower the public users and the stakeholders during the design process.

Two cases are analyzed to reveal the direct and indirect participation in the practice. The University College of Urbino in Italy designed by Giancarlo De Carlo’ shows how an indirect participation was used to fully read and decode of the place’s genetic identity, historical context and the innate needs of the potential student users. While for direct participation, in Chengdu after-earthquake preliminary school designed by Shigeru Ban et. al ,the simple, local ready cardboard tubes structure, which could be jointly built and assembled by unprofessional volunteers, provides a quick solution appropriate to an emergency situation in its case and represents the Chinese building tradition of public collective building. Consequently, public’s constant participation is an essential tactic to ensure the architecture and community more socially responsible and sustainable in its life circle duration. Participatory approach is a fundamentally thinking and implementation of design essence and political standpoint in the building process, as well as part of a subtly education that represent the evolutionary diversity of the interests in the community.

Keywords

participatory architecture, user-orientation, open design for built environment

INTRODUCTION

Participatory theory and practice in architecture, commonly known as community building, civilised architecture, citizen participation and neighborhood planning, etc., is generally understood as an historical reaction against the rigid modernism architecture and urban planning strategies of the mass-product and rapid development industry with their excessively stress on functionality, user passivity and determinism, losing contact and even knowledge of the context, simplification of interpretations of human and social behavior, hot arrogance of art and cool neutrality of techniques, and hierarchical planning systems.

Actually the concept of “participation” range wide in multidisciplinary research. In politics the core principles of “citizens participation” is established on the common view that citizens participation will help developed more public preference policies and increase the community’s consensus of the policies, so as to improve a more reasonable political decision system. In sociology “participation theory” stress more on rights of vulnerable groups, equity of individual member in social development and the efficiency of all the various social input during the development process, basically its essential to inspire the subject consciousness and behavior of the stakeholders. While in city planning theory “public participation” is increasingly raised as it’s believed that a planning based on consideration of local people and community is a new direction of urban planning paradigm. Then to architecture, the end users participation means from microscope to decode and resume a true architecture of sustainability and humanism. We bring the public participation in the design of an open built environment today is not only to highlight its humanistic concern and respect to individual life , but also need to recover the regional typical culture and the local identity through a new human–built environment, human - human and human -nature relationship .

The start point of participatory architecture is to emphasise more users’ opinion in the process, but not ask the architect to wash his hands of the matter. If a new construction wants to recover the site’s authentic and objective feature, it should absorb the regional culture context and well connect with the specific requirement of its potential users. While the efficient ways to fully understand what the users need is to design with them side by side rather than standing at a far distance to design for them.

Consequently this article centers around the open design in built environment stress on participatory architecture which adopts the approach swift from designer-orientation to user-orientation, and corresponding standpoint from “design for people” to “design with

people" in a goal to empower public users and the stakeholders during the design process.

Why Participation?

Look back to the last three decades of constant high speed growth in the Chinese and other growing countries' city expansion and numerous housing construction, it's not exaggerate to say that, we are too idiot to totally throw the baby out with the bathwater. Most of the people, including some of the governors, the experts and the scholars are always open our eyes to else in the world, but not confident enough to look back to self and cherish what we have at hand. We are chasing the economic development and a beautiful look of the city image in the price of losing our own national identity and the traditional core culture in the society.

In the modernisation and urbanisation process, we are too fascinating with the western rigid modernism architecture and urban planning strategies of the mass-product and rapid development industry with their excessively stress on functionality, hot arrogance of abstract form and cool neutrality of techniques. Here and there in almost every city the poor are expelled from the centre area, the old unused or still used houses in the historic region are cleared out to make way for the new construction for commercial profit and political ornament pursuit. When busing changing the cities' physical environment with the western functionally criteria, the historic fabric of the city and its traditional culture value is eliminating in the so call process of urbanisation and city regeneration. We can't deny that architecture is a global phenomenon, so it is natural that a Japanese architect is influenced by what it does a South American architect and vice versa. Having said that, however, everybody should keep their own identity through a consistent core value, every nation should have their own identity through its diverse image of the physical environment and the people, which is the fruit of one's social affair and anchor it in the place where goes to operate, so that each project proves unique and for the environment.

And if we turn to any architecture or planning magazine, we always encounter series of building images which have been photographed and published without people. The editor, the architect, and the photographer all seem obsessed by an insistent and compulsive need to eliminate people as if they were contaminating germs. The evaluation of the work is always completely independent from the users' opinions. Even worse is that with the hierarchical planning systems, the residential communities are growing to be user passivity, simplification of interpretations of human and social behavior, losing contact and even knowledge of the local context. Through the capitalist grid of spatiality, people have become passive, acquiescent and disconnected from their environment. Consequently we can understand why there's so many user complaint and social problem in the communities.

Almost from the last decade, sustainability becomes buzz word from top-down policy guideline to housewife in the kitchen for improving our physical environment. Nevertheless, we can't simply put the xy on a list to meet certain ecological parameters and so as to define a sustainable building. Sustainability is a concept that has to do with respecting of the community's historical events, existing structures, urban training, and social, economic even behavioral factors. Every aspect influences the architecture so that it is a fantastic melting pot of influences and should be embraced by the project.

Therefore, other than the failure of the utopian retrospect to modest traditional art and craft and the arrogance menacingly modernisation, the third road in-between is to pursuit a sustainable built environment through inheriting of the traditional history value, adopting the ecological wisdom, human and culture context concern and collective participatory strategies.

The Direct and Indirect Participation

In order to fully analyze the public collective participatory strategies in the comprehensive sustainable built environment design, we will look into the theory research and practical examples of participatory architecture in two different perspectives of direct and indirect participation. Here the direct participation means the direct interaction among the professional architects, engineers and the extensive stakeholders of governor, entrepreneur, developer, resident, villager, public, researcher and even NGO during the life span of the built environment. Fundamentally in direct participation all walks of people are the subjective body to cooperate with each other and commonly decide what the building will be and how to organise the implementation. In a comprehensive design project all the parties supplement each other and no single can be neglected in the process. While the indirect approach is special when there are unpredicted users or the group covering a wide range that the intimate contact is difficult, and then an indirect reading and decoding of the place's genetic identity and the potential users needs is necessary. When analyze in detail, the indirect participation is an objective solution to take the relevant elements of resource, climate, topography, geology, history, culture, economy, industry, material, technology that influence the built environment into account. The process of reading and decoding these features could be a solid basic for effective design and possibly cultivate the attention and participation of those who is or to be concerning about how the built environment will be turned into.

And following two cases study of the Giancarlo De Carlo's design for Urbino University College in 1960s and Shigeru Ban 's Chengdu after-quake paper tube school in 2009 are analyzed in detail to further explore the correspondent direct and indirect participation strategies in the practice of humanistic built environment that truly design with public.

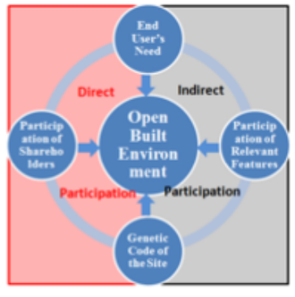


Figure 1. Participation Built Environment Design System (by author)

Indirect Participation: Giancarlo De Carlo's Design of Urbino University College in Late 1960s

In the late 1960s the Italian architect Giancarlo De Carlo and other architects in Team X had conducted a series of pioneer projects which adopted the early participatory architecture strategies. This paper will take a detail analyze of Giancarlo De Carlo's practices of Renewal planning of the medieval city Urbino and its university college on the hillside as example to chase how to take the innate needs of the humans as precedence to coop with the failure of abstract functionality. While it is also a successful attempt to respond both to the immediate landscape and to the morphological memories of the medieval city nearby and see how new building can be added to the landscape in dialogue with nature in its age.

In the turn of Italian postwar transformation, De Carlo was invited to make a renewal plan to boom tourism and sustain the decaying medieval Urbino town and house the students of the university. By 1966, the number of students had exceeded the local resident population, with about 10 000 students of whom 7 000 come from outside. The adaptation strategy of the projects is absolutely a participatory practice lasting for two decades, especially the college students' dwellings on the hillside.





Figure 2. Plan and Bird-eye Panorama of Urbino College (by Giancarlo De Carlo)



Figure 3. On site photos of the Urbino College (by author)

While differ from local residents' direct participant in the construction process in the other ancient village's regeneration project, he used an indirect participant approach here ,which is to fully "read" the historical context and the innate need of the potential users here, the university students. Rather than imposing a rational grid on the irregular topography, the cellular groupings or villages of dormitory buildings sprawls through the whole summit of the hillside organically and spontaneously, adapts perfectly to the typography of the landscape, coincident with the historical urban fabric of the Urbino old town two mounds away.

By integrating contemporary architecture, vernacular forms, and ancient landscape with simple and organic design, these cellular group buildings are connected with external ribbon paths in the grass, red brick and reinforced concrete are alternated using in the structure, and terracing strategies are applied to ensure that there is enough southern sunshine in lead to the interior dormitory room. The link between the private and collective or public life at each of the college buildings was rigorously calculated, and the later ones consciously change what was felt to be the social drawbacks of the first one on the hilltop. A share experience with possible links by multiple routes in the complex is encouraged, either through the inter-connecting or via the roof-tops. And the social openness indoor and outdoor is of great potential in places waiting to be filled out and encrusted with inhabitation. The diverse access to open air spaces of rooftop, the paths' bend and the inner connecting areas creates a large public space that encouraging the student users' potential interaction and offering a community feeling. Either sipping coffee with friends or sitting quietly reading on the rooftop of the building, the students can always enjoy the pleasant open breath-taking panorama views over the natural landscape of the Marche to the south and the west. Therefore in this built environment, the students receive a renewed respect, no longer be treated as a crowd, but as single people, given a chance to develop their individuality.

Seen from the other side from a distance ,rising above the flowing ranges of bed-sits further down the hill, its dynamic composition of cube and semi-cylinders appears as the formal palazzo encircled by the town's informal street terraces where a palace in the form of the city, while here is a university in the form of the city. Here the built environment is not merely just a basic area of sleeping and studying dormitory but a landscape that is ever changing from the start of design through using stage, accumulating diverse elements of the student users ' social needs and potential networking behaviors according to multiple interests.

Nevertheless we can draw from the indirect participation architecture that effectively reading and actively decoding the sites reveals the past and foresees the future and means having designs on what you are looking at. Reading also means searching for a place's genetic code as De Carlo named it. Searching out the traces that 'how the site's terrain in relation to its contours, to the sun , to light, to prevailing winds, to waterways, to roads and footpaths, the cultivated fields, to orchards, to areas planted with trees, woods and other buildings; the kinds of relationships that exist between built-up spaces and open spaces, spaces foe activities and spaces for quiet, between homes and public facilities, between places of work and places of leisure; the ways built-up systems ,component parts of buildings, techniques used and choice of building materials are reciprocally in harmony or

dissonance.' All these traces are typical clues that will cultivate appropriate intervention, ordering them in new systems that could be in significant to us today. Inevitably, we have preconceived images and we start to read, when tentative design moves take the discoveries made through reading into account, while a next reading checks back on its correspondence with the design images and so on.

As he stated in his article An Architecture of Participation, Giancarlo de Carlo said, 'We have participation, in fact, only when everyone takes part equally in the management of the power structure, or when the power structure no longer exists because everyone is directly and equally involved in the process of decision-making.' In his ideal of participative democracy, buildings cannot be put up without occupant involvement. There is always, in participatory action, the real difficulty of judging the amount of energy inhabitants can, and desire to, invest in any project; it is particularly difficult with undefined end users of the university's kind. Consequently the alternative indirect participation approaches of always keeping the possible end users' need in mind, fully reading geographical features and historical context of the site, and combine the place's genetic code in design with intimate respond to the close nature are the key points in indirect participation architecture, where the particular form and character of individuals comes from the interaction between genetics and environment and the life history.



Figure 4. The indoor and outdoor connection system for student users (photo by author)

Direct Participation: Chengdu After-earthquake Paper Tube School by Shigeru Ban et.al in 2009

Chengdu Hualin Elementary School provided temporary classrooms after the 2008 Sichuan earthquake. It is made of cardboard tubes, which were cheap, readily available locally on site and can be recycled after use. The cardboard-tube school's intuitively structure and simply construction techniques also meant that it could be jointly built and assembled by unprofessional volunteers, which is a quick solution appropriate to an emergency situation. Their biggest concern after the earthquake is how to construct a suitable building for the children more efficiently and rapidly, which could especially be implemented by volunteers, students and the local residents, with local materials and resources, such as PVC or foam board to reduce costs and speed up the construction period. It's a high efficient adaptation and reaction for the particular need after disaster. For materials choice, although there is other selection like bamboo, but as its brittleness and unpredictability is not suitable for standard construction, the local prefabricate paper-tubes are the perfect choice with their easy processing and the structure strength is controllable for such a large span structure.

Shigeru Ban and his team came to Chengdu ten days immediately after the disaster Sichuan earthquake on May 12, and call-up a group of researchers, students and volunteers to start for solution of after-quake reconstruction. The design of the preliminary school started in July and implementation begin in early August; nevertheless the construction only took five weeks. From the very beginning of the project to the end, the chief architects Shigeru Ban and Matsubara Hironori only came several times for general guidance, all the design details and construction organizing were publicly discussed by the students and the volunteers themselves. Every participator needed to be familiar with the design details and responsible for parts of the implementation with the at-hand tools. They also needed to take charge of the material budget and purchase themselves too. While the professional engineers of the lab assisted them for the final overlook for the sake of the reasonable budget and check for structure safety and stability. The local students and participators were the direct responsible for the decision-making of all the design and construction process to effectively balance the advantage and disadvantage of the local materials markets and building condition.

Total building area is 540 m^2 with three rows structure divided in nine 6mx 9.7m classrooms and the play space in between. Materials of beams, columns and the main support frames of the gable roof are all paper tubes. For the paper tubes with original conjugate diameter 240mm , thickness 18mm, length 2~3m, they had to be coat with varnish first for waterproof and then cut and jointed with wood connections and the ready-made steel components. The roofs and walls are made by aluminums foam board from the local factory, with hole opened on the roof for sky lighting. Outside the rooms the eaves reached out far with paper tubes columns to provide sufficient walking and playing space for the school users. The groups also learned during the process to use the oddment materials to make some interesting toy and furniture for the children.

Set aside some of the nonsense critic base on aggressive utilitarianism commercialisation and illusory formalism aesthetic, we can say that this project is a unique practice down-to-earth with sense of social responsible and humanistic ethic for the vulnerable groups in the society. As Shigeru Ban said, if a so call permanent reinforced concrete building is not logically design and then collapse or be dismantle in a short period, it could not be call permanent; whereas a transitional architecture like our paper tube school structure, if it perfectly fulfill the mission during its life span, and if its existence is inseparable from the collective effort and contribution of numerous people, then we can't call it temporary, as its spirit of eternal goodness will stay inside people forever. When the children who once witness the disaster of earthquake happily resume to the safe and bright classroom, playing freely on the open space under the deep eaves, running joyfully through the paper tube columns, rather than touching the cold concrete and surrounding by dull structure, the significant of this extensive involved public participatory project has transcended itself as merely a school building.

The Chengdu paper tube school of Shigeru Ban is just among those increasing amount of public direct participation architecture practice in the recent decades. There are a growing numbers of people, either professional or unprofessional, are involving in the exploration of an eco-friendly and social harmonious built environment with extensive public participation. The Taiwanese architect Hsieh Ying-Chun has promoting his typical vernacular, low cost, open to participation building strategies ever since his involvement in the reconstruction of the primitive tribe Ita Thao after the 1999 Taiwan earthquake by encouraging the villagers and unemployed young people to take part in the reconstruction of their own houses and the whole tribe in a simple, energy-saving, ecological and effective way. Meanwhile, the architect and volunteers make concerted efforts to rebuild their homeland by using the traditional form, local material and modern adjusted technology to resume the gradually losing local culture identity, which is extremely valuable especially in this global homogenisation.



Figure 5. Chengdu after-quake paper tube school by Shigeru Ban et.al (from Shigeru Ban Architects)

Features Analyzed of Participatory Design in Built Environment

Consequently, it's drawn from previous research and the numerous cases that a true direct public participation includes not only the basic right of access to information, advice and comment, but also the extensive participation and administration of the whole construction process with the following typical features:

1) First the roles of all participated parties change correspondently during the design process. The built environment of direct participation projects was rarely constructed only by professional architects, instead was produced by local builders and craftsmen's guilds. While in ancient Chinese construction process, it is as well the tradition that a building either public or private resident is always involving the collective decision and implement of the house owner, carpenter, stone-man, mason, Fengshui master, etc., and it is particular commonly in the rural communities which the public mutual help is pervasive. The Chengdu after-quake paper tube school represents a perfect example of the contemporary practice of learning from the traditional Chinese building process by public collective effort. While in the indirect participation projects the architects play a role that is to carefully read the physical, social and cultural context of the hillside community and its connection to the historical fabric to the old town as in the case of Urbino College, and allow these local concrete and red-brick forms spontaneously express themselves in the daily evolution of the college community and its environment.

2) Besides, the whole process of participation design is fundamentally different from the previous practice. An architect-orientation design process is consisting of three general phases: the definition of the problem, the elaboration of the solution and the evaluation of the results. While empowering the end-users and the community public, the practice of participation, therefore, changes each phase of the architect-orientation design process and changes the system of relationships between various phases including objectives, solutions, ways of use, and criteria of judgment as well through the local users' reciprocal adjustment, generate an ongoing experience. There is fully initiated by the citisens to token participation in the degree of involvement or ladder of participation. Although full participation is an ideal, moderate degree of public involvement is necessary to successfully produce the local identity and community values. While in the practice of planning based on participation, the sequence of the phases is not that irreversible one-way routine and separated from each others as it was, but a reversal load pattern. This iterative path is tortuous, oscillating and itinerant, rather than linear, as the focus closes towards a design solution.

Participation implies the presence of the users during the whole course of the operation. This fact gives rise to at least three basic consequences: each phase of the operation becomes a phase of the design; the "use" becomes a phase of the operation and, therefore, of the design; the different phases merge and the operation ceases to be linear, one-way, and self-sufficient. It means the phase of the definition of the problem is part of the design in that the objectives of the operation and the resources allocated to it become a topic of discussion with the future users. And only discussion with the users can bring out these contradictions and resolve them, or if not resolve them, at least bring their explosive potential into open conflict.

3) Meanwhile participation is part of a subtly education process that the individual user will eventually come to feel little barriers or no conflict between the public and private demands. In the working –together –technique between architects and users pattern, professional architects guide a group of local people involvement from the beginning of the project's design stages, even into the construction and continue through the maintenance. As the Chinese architect and educator Yung- Ho Chang also said, it is not enough for an architect to design and think yourself, you have to educate the surrounding people, no matter they are low in-comer or survivor of an earthquake, you have to let them fully understand you intention. Only basing on mutual understanding could the built environment sever the purpose and be properly used by the people.

4) Furthermore, the evaluation criteria are changed too. In the practice of authoritarian planning, the shortsightedness of the objectives and the lack of interest in the question of the use of the product make it impossible to establish any criterion which allows a judicious comparison between proposed and actual accomplishment. The wishes of the future users are either ignored on principle or overthrown by the application of models and thus, create phenomena of social segregation. Compare to the relation

to other generally aesthetic values, the evaluation of participatory architecture is always completely independent of the evaluation of the use which will be made of it. Instead of imposing a top-down program, the design process was guided through an evolutionary collective bottom-up self-realizing pattern on its own scale and with traditional building logic, in which the aesthetic criteria accumulative represents the evolutionary diversity of the interests in the community.

5) Finally, it's not exaggerated to say that only through a certain appropriation of public participatory can architecture and community become more responsible and sustainably engaged with the environment and social challenges. Lack of practical local participation could greatly affect the outcome in the pursuit of sustainable built environment. History is full of examples that demonstrate this. In a project initiated by the China-US Sustainable Development Center in Liaoning Province, although the professional organisers from American design office and the Chinese Tongji University had put forward an excellent scheme of general local economic development path, green housing guidance, new energy technology and even waste management system for the local villagers, still no one wants to risk living in this technical sustainable but totally strange community. As the American sociologist John F.C. Turner pointed out, once the residents gain the initiative of decision making and could freely contribute in the procedure of their house's design, construction and maintenance and to their living environment , their potential could be inspired and the whole society could be in a different pleasant image. While on the contrary, if the residents are absence from the control and responsibility during the key stage of the house construction, the built environment would sequent become their realisation obstacle of personal value and economic burden.

Conclusion

In conclusion this thesis argues that extensive public's constant participation in the life span of planning, construction and maintenance of the built environment is an essential tactic to ensure the architecture and community more socially responsible and sustainable. In the correspondent direct and indirect participation strategies, direct interaction among the professional architects, engineers and the extensive stakeholders is required, all the parties supplement each other and no single can be neglected, meanwhile indirect participation reading and decoding of the place's genetic identity , historical context and the potential users' innate needs is necessary as well

Participatory architecture is nothing of design style or building technical orientation, but a fundamentally thinking and implementation of design essence and political standpoint in the building process, which represents a positive evolution of relationships between physical spaces and society, especially the decentralisation and the constant intelligibility in space and time. Design an open built environment means that we need to pass from the rigid functionary and arrogance of authoritarian practice to a new road based on user-orientation approach and public participatory strategy, which is not merely an alternation, but the fundamentally and systematically consideration for the built environment that need to be more engaged with the environment and social challenges.

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Schools as agents of change

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ABSTRACT

St. George's School is a new rural K through 12 school in Gondar, Ethiopia founded by a UK based organisation and intentionally reliant on local Ethiopian talent, resources and expertise. Education is vital to move Ethiopia from poverty to stability and increase access to jobs. Education also provides a means to resist the unrest and instability that plagues many African countries that suffer from the impacts of neocolonialism. The school is designed to be broadly self-sustaining and will eventually become financially and organisationally independent.

The Ethiopian context was the overriding driver of the school design. The close ties to the local community, the school site by the river, the architectural design and construction processes, and planning for the future uses of the school all had an impact on the development of the project. From the project's inception, the educational philosophy for the school also evolved as a result of range of factors. The project team was committed to creating a school that would not only provide an excellent education but also serve as a new community hub that would also promote local economic development. The team was transdisciplinary including educators, designers, financial experts, a local nonprofit and community leaders with regional experience.

The school provides a completely free co-educational experience for the community's most vulnerable children and demonstrates the power of design to provide a healthy environment and an important physical locale that fosters learning and growth. At St George's, children become the future agents for change in Ethiopia.

Keywords

gender and education, sustainable school ecosystem, design strategies

INTRODUCTION

St. George's School is a new rural K through 12 school in Gondar, Ethiopia founded by a UK-based organisation and intentionally reliant on local Ethiopian talent, resources and expertise. The School is designed to be both broadly self-sustaining and to eventually become financially and organisationally independent. Education is vitally important to move Ethiopia from poverty to stability and increase universal access to jobs. The primary goal of the school is to provide effective, excellent education that targets the whole child. Children have many different needs - physical, social and mental wellbeing, all of which must be addressed at school. By setting a design agenda that seeks to respond to the child as an individual we can start to address the specific needs of a child living in poverty. The school acts as a cultural bridge attempting to move children and their families out of their local economic condition to new opportunities available through education. It mediates between local cultural forces that can disadvantage children because of their socio-economic status, and in particular impact girls based on their gender. From the project's inception we set additional aspirational goals for the school building and the educational philosophy. The close ties to the surrounding community, and the need to forward plan for the future uses of the school, all had an impact on the development of the school's philosophy. The Ethiopian environment and a number of related sustainability issues were also important drivers of the design.

The project team was intentionally transdisciplinary to incorporate an integrated approach for the project. The team included educators, designers, financial experts, local nonprofit partners and community leaders with regional experience. The team was committed to creating a school that would not only provide an education but also serve additional uses as a new community hub that would also promote local economic and community-based development. We, the designers, have been conscious that the buildings make an intentionally modest contribution to the village. We designed the structures to be deceptively simple and set back from the road and sheltered by new planting with the back of the school facing the street. As civil unrest continues to grow in the country we hope that the school is seen as an important part of, rather than distinct from, the community.

As designers we can address social, economic and environmental challenges faced by children and their families in the community through a deep understanding of the local context. By adopting a trans-disciplinary project approach and incorporating systemic design thinking we can deliver a response to the site that works within both natural and social ecosystems that positively builds on

this existing context. In some cases, where poverty for example, is suppressing local aspirations for families to adequately provide for their children especially for girls, systems may require disruption to enable new opportunities to be created. By incorporating the contextual "problems" into the design and educational brief, we have been able to make substantial gains in the first few years of the project. The school provides a completely free co-educational experience for the community's most vulnerable children and demonstrates the power of design to provide a healthy environment and an important physical locale that fosters learning and growth. We maintain that design has the power to support radical transformations through both the physical benefits offered in a better building (positive, beautiful and healthy) and through the theoretical and practical benefits of a "good" education, particularly as we consider the future for young women. At St. George's, children become the future agents for change in Ethiopia.







Image 1. St. George's School Phase II Opening, source: Alison Mears Photographs

Context and Problem

Ethiopia is a country that has encountered many historic catastrophes and environmental extremes. As we write in 2016, Ethiopia is in the midst of its most serious drought since the devastating drought and attendant famine of 1984 when 600,000 people died. In 2016, while people are critically short of food, because of "peace, greater transparency and prudent planning" (De Waal 2016) the drought has not lead to vast numbers of deaths, but food shortages will still impact the most vulnerable members of society- children and their mothers. Many natural events are exacerbated by human and political upheaval. The drought of 1984 occurred in the midst of a civil war, and access to food was disrupted as "Mengistu's government blocked trade, bombed markets and withheld emergency supplies in rebel-controlled areas," (Ibid.) causing massive famine. Ethiopia's underdevelopment has persisted because of neocolonialism (Amin 1974; Rodney 1972) also referred to as "the last stage of imperialism" (Nkrumah 1965). Neocolonialism continues the economic model of colonialism. Countries may achieve legal and political independence, but are subject to the negative economic influence of external governments leading to many of Africa's current economic and social challenges. The pressures associated with this new form of economic colonialism result in governments that can rarely, if ever, invest in their own physical and social infrastructure such as schools and good quality education. Other sectors at the national and local scales, including housing and employment opportunities are also severely affected.

Azezo, where the school is located, is a small, very poor village south of Gondar. It is home to one small public school and modest houses built of mud and sticks. Residents are subsistence farmers and generally live a life dictated by local traditions. All of the roads in the village are dirt and quickly become impassable when wet. Generally, rural communities receive less aid and support than urban centers.



Figure 1. Contextual Site Plan, source: Paci+Mears Architects, 2013

Beyond the national political context and the overriding context of rural poverty, there are a number of key factors that impact local conditions and were considered in the design of the school.

Gender Disparity

Traditionally Ethiopia has also been a largely rural and religiously conservative country. In the last 5 years with a free-market focused federal government, there has been significant national change in urban areas and some change in rural communities. The development of new industries, enhanced infrastructure and other characteristics of modernisation located in or near Addis Ababa and connecting other urban centers has prompted significant local change. More jobs have been created in the capital city, education has expanded and the city has built new highways and buildings. Opportunities for both men and women have improved. However, many rural areas remain deeply traditional and retain many problems that have plagued communities for generations. "Women and girls in Ethiopia are strongly disadvantaged compared to boys and men in several areas, including literacy, health, livelihoods and basic human rights. They also suffer from low status in their society and lack social support networks" (United Nations n.d., p. 98). However, when women in poverty are given access to programs that integrate financial support and independence, as well as improved access to health services, literacy and education and social networks, their lives improve. When women's lives are better, the quality of life for all members of their families also improves. We identify poverty and gender disparity as important Ethiopian challenges in education that can be addressed locally in Gondar either directly through educational programming or through the community programming and outreach that would be based in the school.

Health Crisis

Gender and geographic location impact many of the health problems confronting Ethiopian women. The rates of morbidity or "incidence of ill health in a population" (Diffen n.d.), and mortality or "number of deaths" (ibid), are severely and negatively affected. "The morbidity rate of 75.5 per cent for women, against 25.5 per cent for men; the maternal mortality of 590/100,000 live births; and adult HIV prevalence of 1.9 per cent for women, against 1.0 per cent for men, are indicators of persisting gender inequalities in the area of health and life expectancy" (United Nations n.d., p. 98). Ethiopian women have suffered some of the highest incidences of maternal mortality in the world as cultural practices that forced girls into early marriages and pregnancies created high-risk pregnancies. Maternal mortality rates have lowered in recent years. By 2000, the Ethiopian government prohibited marriage before age 18, though many rural girls are still forced into early marriages, endure genital mutilation (national rate of 74.3 per cent) (Ibid.) or become the victims of domestic violence. New reproductive policies have been introduced aimed at reducing fertility by offering modern contraceptive supplies to all women of reproductive ages services but these are targeted toward the wealthy, those living in urban areas, and adult men. While there is general political will and commitment to address gender inequality, there has been limited capacity to fund and implement community based interventions targeting vulnerable rural women. Health issues are of great importance at the school. We are tackling early childhood health issues such as hunger and lack of physical development through regular health screening and vaccinations. As the children, particularly the girls, move towards adolescence, we are planning for educational programming that mitigates gender disparities and supports their ability to stay through high school.

Limited Access to Education

In Ethiopia the majority of the schools are State-run and underfunded. Ethiopia is one of the fastest growing economies in the world but its per capita GDP is very low and its population is extremely poor. Many children do not attend school because their families cannot support those expenses, forcing the children to work to contribute to the family income. Where children are able to go to school they often attend substandard schools that cannot provide them with a strong education. Education is vital to break the relentless cycle of poverty in Ethiopia. However, in rural areas, where 80% of the population lives (USAID 2016), there is a shortage of schools and up to half of all children do not have access to basic education and many students, especially girls who may marry early, have extremely limited access to these schools. Although the primary school enrollment rate of girls in Ethiopia has almost doubled from 21 to 42 percent in the last decade (ibid), the majority are unable to transition to secondary and tertiary school due to long travel distance needed to get to distant schools, personal security in rural situations where young women are victims of sexual violence and the economic challenges of school attendance. As girls grow older, academic participation becomes increasingly difficult as it removes girls from essential income-generating activities that support their families. There is a great need to support more opportunities for girl's education from K to 12th grade through programs that acknowledge the current problems confronting girls and enable them to access education.

Additionally, local patriarchal structures that exclude women from key decision-making and create circumstances that challenge the role of mothers in helping girls to access education are problematic. Some NGO's have been established to help build critical networks for girls and young women and provide simple digital tools and new communities to create "girl centered community engagement" (Girl Effect n.d.). Our goal at the school is to provide equal access to a quality education for both boys and girls.

The design and Educational Philosophy

The philosophy for the project was grounded in an integrated approach. How do designers incorporate and confront significant environmental, social and economic challenges and address them in the built environment? Where do our responsibilities begin and end? In this project we were all extremely conscious of our context and wanted to be both respectful of it but also effective in our work. We focused on a number of fundamental issues that informed the design decision-making process.

From the project's inception, the educational philosophy was closely related to the local community, but was also influenced by the site, the architectural and construction processes, and to the future uses of the school. As mentioned previously, the project team was also transdisciplinary and committed to creating a school that would not only provide an education but would also serve as a local community hub.

The design process began early in the project through the negotiations with local officials and within community engagement action to understand critical social systems. Before the project began we discussed the idea for the project to local community leaders including local parents to understand their challenges and listened to their dreams of what a school could be. The community was overwhelmingly supportive of the project and immediately understood the value of a new school. Based on the strength of the concept, the local council donated the use of the land for the new buildings and grounds.

At the project's inception we noted some of the local political and social challenges that the school would be required to confront. There were very few local women political leaders and most women appeared to be relegated to very lowly positions. Our local

architectural and engineering consultants were all men. This was in contrast to the co-head of the Board of Trustees and founder of the English schools who is a woman, the architects who are women and the first and now second school Directors at the school are also both women. There was one woman working with our partner NGO, Link Ethiopia, who was a Gondar born woman who became the strongest local advocate for the school. We recognised early on that the pedagogy at St. George's must address the challenges that the girls who would be educated at the school were destined to confront. We understood that the place of the school should become a model to promote gender equality in education and enable girls and young women to eventually access economic opportunities and enable them to financially support themselves and their current and future families. In addition, we acknowledged that change would only be possible if an entire generation, both boys and girls, were educated equally.

This project for a new school considers "environment" as combination of a complex natural ecosystem situated within interrelated human social systems. We maintain that these systems relationships should be understood in order make the proposition for the new school. We used mapping and analytical tools to reveal contingencies that informed the broad sustainability plans for the school. The environment and a number of related sustainability issues were important drivers of the design. Locally generated electricity is expensive and unreliable. The river regularly floods. The country has been periodically ravaged by drought that has decimated the population, destroying crops and creating severe famine. Poverty has impacted the environment with much of the landscape denuded of its forests because of people's need to access inexpensive fuel for cooking fires. In Ethiopia, the landscape is close and powerful and it is important to design with and within it.

The team adopted a number of strategies that respond to these conditions. Local construction materials and practices were used to build the school. Energy conservation and autonomy as well as food and water security have been top priorities. Passive energy systems condition the classrooms and dining room. Landscaping included the reintroduction of indigenous plants to increase local biodiversity and stabilise the soil, and intensive food production is an integral part of the planning.

We adopted phasing as a financial and program planning tool that contained costs within the stringent budget limitations. We used prototypes and best practices to address the "unfamiliar" context where the construction outcomes can be unpredictable, and phasing allowed us to learn from past models and past strategies. It has allowed the designers as well as the school administrators, to plan for and develop successful practices. This includes the built infrastructure and its construction process, but also the pedagogies that are being developed. Our process incorporates the ongoing review of the work to evaluate and learn from successes and failures.







Image 2. Fromtop to bottom: Students dining, Health check-ups, Vegetable Beds at St. George's School, source: Alison Mears Photographs.

The Design

Site organisation

The design of the new school takes full advantage of the physical opportunities of the site. The large site is adjacent to a river to the east and bordered by the village of Azezo on the western boundary. The village and the site are served by rough dirt roads that provide access to the main road that connects the area to the airport to the south and the city of Gondar to the north. The site is triangular in shape with the long side oriented north/south. The site shows evidence of flooding over time, with a setback that allows for the rising water, and thus the deep, relatively unstable black soils have limited bearing strength, restricting construction to single-story structures. The site has been farmed and there are a number of fruit-bearing trees and other food-producing plants on the fields near the river. Entrance to the site is most accessible at the northwest corner, closest to the all-weather road and this is where the first phase of construction was located. The site utilises a north/south and east/west organisational grid to passively respond to the sun and to protect the buildings from the prevailing winds.

The courtyard and the classroom

The design for St. George's School building primarily organises classrooms around courtyards designed to give a sense of a school within a school with groups of children and their teachers located in proximity to their age groups and classes. This was an important site planning approach in a school that will eventually teach children from kindergarten through grade 12. The courtyard strategy was chosen for a number of additional reasons - each courtyard groups students into carefully chosen age cohorts with very particular academic needs; the courtyards help mediate the harsh Ethiopian climate by both providing shade and shelter adopting passive design principles; each courtyard offers a range of different kinds of gardens; and the grouping of classrooms around each courtyard reflects the proposed construction phasing and allows each phase to "read" as a complete complex of buildings.

A number of different teaching spaces have been designed-- including traditional classrooms, open-air pavilions and spaces for large group gatherings. Single loaded breezeways connect classrooms maximizing natural light and ventilation and provide protection from the hot summer sun. The design uses mediated courtyards as outdoor classrooms and protected places to play. Incidental spaces adjacent to classrooms in the sheltered walkways, in the shade of the trees and adjacent to the pavilions, provide a number of cool, sheltered places for children and teachers to meet and talk. On the eastern side of the courtyard are two open pavilions overlooking the river for art and music and a range of other extracurricular activities. There are many support spaces for the school including the kitchen and the dining room that doubles as an event space and library. In addition to the school buildings, a comprehensive landscape plan was developed to organise and reclaim the site as a viable and sustainable agricultural site that also reintroduces and reforests the site with native Ethiopian plants.

Materials and the environment

The range of building materials is restricted in Ethiopia. Concrete is the most ubiquitous material. Wood is limited, due to the decades of deforestation in Ethiopia, and generally available in an unfinished "natural" form, rather than milled. Other commonly used materials are generally available but are imported, such as steel, both formed and reinforcing bar, corrugated steel for roofing, and aluminum framed windows. The primary intentions of building were to reduce construction costs, to use local construction and finish materials where possible, to build to the highest possible standards and to minimise the use of electricity as much as possible to reduce ongoing operating costs.

The buildings use a combination of the local and abundant stone as a common base and foundation material, with painted concrete block walls and custom steel trusses with corrugated iron roofs with gutters to collect rainwater. Roofs are sloped away from the courtyard to optimise rainwater collection. Water is collected in aboveground tanks that are located in the garden as grassed/vegetated mounds throughout all phases of the proposal. Open concrete block walls, locally fabricated, enclose the bathroom and pavilion structure and allow for the passage of breezes. Operable windows are located in the courtyards walls at a lower level that is at an appropriate eye height for both teachers and students. There are also higher windows to capture natural light for the classrooms. High windows on the exterior walls minimise the solar gain and allow for natural ventilation in the classrooms. The verandahs surrounding the courtyard are shaded with light colored fabric awnings to allow light to enter the classrooms while still providing shade. A number of prototypes for the classroom furniture were developed with local carpenters. Because the availability of wood is limited, the furniture was built from a combination of a welded steel frame and a wooden back and seat. The furniture is sized to meet the physical characteristics of the children in each phase of the school.

Other environmentally sustainable future initiatives that would allow the school to achieve some energy independence from the erratic local electric service include photovoltaic cell supply and installation and solar hot water system supply and installation for the laundry. As this area has suffered from periodic droughts, the design team has always been conscious of water collection, planning for long term greywater reuse systems and the use of composting toilets. We would also like to explore using more locally sourced materials, especially some of the new mud bricks systems for future walls that could be made on the site.

Construction and making

One of the many challenges of the school project was the construction of the school itself. Construction is usually a local practice, so the team spent time trying to understand the limitations and opportunities that would be confronted in Gondar. The first major problem was the remote location of the project site. The project benefited from a partnership with a firm of young engineers and architects who practiced in Gondar and who were hired as the local design and construction consultants. It took some time to develop a common design practice that would support the development of the project. It was also a surprise that the construction teams on site were clearly delineated by gender. Men worked on the most highly skilled jobs, such as welding and installing the concrete block work. Women, who outnumbered men, were relegated to the heavy manual labor, moving soil and rocks. Despite discussions on site about promoting more opportunities to develop a broader range of skills, the local construction team continued to maintain traditional practices. The design teams continue to advocate for education for women in all roles in the construction. St. George's School construction commenced in the spring of 2013 and the school opened on 4 March 2014. Phase 2 opened in May 2016 with six new classrooms and additional specialised teaching space. Today over 250 children attend the school.

Evidence of success and planning for the future

Educational success

One measure of the success of the school is the high academic scores of the students at St. George's School. While the focus on scores can seem perfunctory, it is essential to develop a range of measures of academic success. Scores provide academic credibility to the Ethiopian government who reviews and licenses the

school. It also ensures the financial success of the school to help raise additional funds currently needed to sponsor the children's education. In addition, education in Ethiopia is test based-- children need to succeed in the state tests to advance onto university. However, test scores do not indicate whether the school is able to resolve some of the culturally determined gender issues, except where the scores indicate differences between girls and boys. Country wide, boys score higher grades than girls. At this school there is no gender difference between the scores. This would indicate that the girls and boys have equal access to instruction and the teachers' attention without gender favoritism. High test scores were achieved during the first two years after the opening of phase 1, suggesting that we have created a new paradigm for a school that could provide a replicable model to share across Ethiopia. St. George's School is committed to ensuring that all children, both boys and girls, complete their schooling and go onto University despite the social and cultural forces that oppose this.

Within the first two years of the school's opening at St. George's School have revealed successes in curriculum, staff, physical space and overall academic approach. Students' academic results for the first and second graders have demonstrated high competency in all areas - English, Amharic, mathematics, environmental science, music, art and Physical Education (Broomwood in Ethiopia 2015). Contributing factors to the high test scores include enhanced curricular practices and overall educational philosophies. The student to teacher ratio at St. George's School is half the national average ensuring more individual attention for students. All the teachers are carefully recruited and highly qualified local Ethiopian instructors, who are being compensated very well by the school. Training and retaining faculty at the school is a key concern and good salaries support retention.

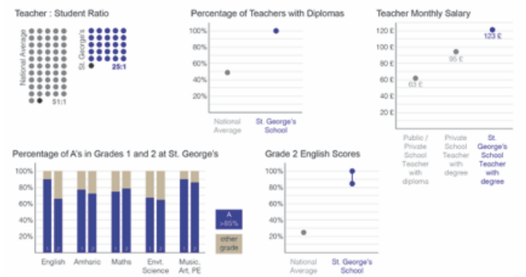


Figure 2. Student Assessment, Classroom Ratio and Teacher Qualification at St. George's School, source: data from Broomwood in Ethiopia, Ethiopian Ministry for Education and American Institutes for Research for USAID. Cristina Handal

Measuring Impact

Direct observation reveals that children occupy the school in very similar ways. There are not separate areas for girls and others for boys. Boys and girls occupy the informal play spaces in the garden, courtyards and pavilions equally - sometimes together and sometimes apart. Traditionally, girls have little playtime as they are tasked with domestic work early. Providing a range of informal social spaces has provided a benefit for the children outside the classroom to play and build new kinds of social relationships. Providing shaded areas has been a distinct benefit with landscape areas supporting informal interaction. All of the outside areas are visible from classrooms allowing teachers to supervise children and intervene if there are problems. The ability to interact with other girls and boys establishes a foundation for more equitable social exchange.

Social and Health Programs

As well as providing a high standard of education, the school provides all educational materials and uniforms for its students, two nutritional meals a day, and provides access to medical care. From its inception, the school has considered the health of all of the children. The school has also put in place a summer feeding program for all children in need, thus ensuring that children continue to physically thrive over the long summer holiday. All children are tested for TB and HIV as this is vital to providing appropriate treatment for the children, and both protects the child and the healthcare professionals. Children also have regular sight and hearing tests, to track their physical development. General health check-ups are also conducted and records are kept of drug dosage and frequency.

Currently the children at the school are still young with the oldest class just entering grade 4. As we begin the process of designing phase 3 we are confronted with the challenges that the girls in particular will face as they enter adolescence. In phase 3 we are designing special places for girls, such as club rooms, bathrooms, and access to sex education and sanitary products to help them transition safely at school from girls to young women who continue onto university. We are also exploring partners who could advise us on gender related challenges to help the school make informed decisions going forward. In addition, boys will be educated to understand the importance of gender equality so that they too will be advocates for change.

In a country where hunger is a constant problem, food production and soil management are critical. To the west of the main courtyard is an area given over to regeneration of native plants along the boundary. Fruit trees, herbs and vegetable production occur in new raised beds outside the school kitchen. More intensive planting will eventually occur within the more protected courtyard. At the outer edges of the courtyard are areas set aside for the future installation of fish tanks for fresh fish production. Outside the courtyard to the east towards the river is a playground, playing fields and agricultural fields, including grain production and other crops. Of particular importance is the production of injera or teff, an Ethiopian food that is grown in the fields between the school buildings and the river. While the school currently produces enough teff to feed all the faculty and children for 5 months of the year, the school is determined to increase production and improve their self-reliance. Finally, the community building that is so critical to the long-term success of the school is being launched. Parents education programs are being developed. Community building including school events that involve parents and caregivers are routinely included in the academic calendar. Parents are employed by the school in farming activities, in the kitchen and in security positions.

Funding

St. George's School is designed for construction in stages that will culminate in a planned school of up to 1,000 children aged 5-18. This process is expected to take place over the next 5-8 years as capital is raised and funds are available. The project began with the Ethiopian Government's donation of a 5.25-hectare parcel of land for the development and expansion of the school. To achieve the planned construction and development of St. George's School it is estimated that an investment of around £1.5 million will be required. Broomwood in Ethiopia is deeply committed to raising these funds, both internally at the schools in London and externally with friends and supporters, to bring this worthwhile project to fruition. To date, the amount of funds raised to support the establishment of St. George's has been £504,142 which has come from a variety of sources. The school is planned to be completely free to its pupils. The operating costs of St. George's are currently met entirely through the charitable fund-raising efforts of the Broomwood Hall Parents Association and through child sponsorship. The operating costs of the 2014-2015 academic year, including all local staff salaries, were approximately £85,000.



Image 3. St. George's School students, source: photograph from Lucy Brook video

Conclusion

We believe we can demonstrate that education can dramatically improve the lives of children living in poverty. By adopting a multivalent approach to the project we are able to address the total lives of children leading to an immediate and long-term improvement in the general well-being of the child, while also having a positive impact on the child's family and local community. We have been designing with the hopes of creating a place where change is possible, and have come to learn that this is a place where change is happening.

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Designing transdisciplinary dialogue to innovate towards sustainability

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ABSTRACT

The purpose of this paper is to contribute to the project of designing for the complexities of sustainability based on collaborative stakeholders efforts to ensure innovation that significantly changes the way designers operate to ensure greater sustainability (Bocken, Short, Rana and Evans, 2014). In this paper, we explore the benefits of reframing techno-socio-environmental problems within a circular system and the value of transdisciplinary dialogue among system stakeholders in order to implement this in a given community (Robinson, 2004). We aim to outline an approach from a theoretical perspective that can be applied to a extensive range of complex problems, unlimited by discipline that leads to a broader discussion on what implications this approach may have for design research. We use a qualitative case study reporting on feedback from two workshops in Hong Kong and Shanghai where outcomes initialise co-creation towards sustainable fashion. A human-centric systems and design thinking approach is used to achieve an integrative, developmental process and transdisciplinary design dialogue within a workshop environment among a unique convergence of fashion supply chain system stakeholders, bridging from start-ups, global retailers and academics, to experienced fabric manufacturers and government policy makers. As a result, participants achieved a deeper and broader understanding of how to create a more sustainable fashion supply chain system, demonstrated consensus for viable change, discussed opportunities to remove development barriers and were able to explore potential new roles and collaborative opportunities in taking the next steps towards visionary sustainability in the fashion industry.

Keywords

transdisciplinary-dialogue, reframe, sustainability

INTRODUCTION

Climate change, sustainability and resilience have become a central focus for governments, policy makers and businesses around the world as highlighted by the UN's sustainable development goals, outcomes and policy agreements from Cop21, Paris conference (2015). The outcome was an agreement by the world's leading scientific body on climate change that the time is "now" to address these issues by retaining the global temperature rise below 2 degrees through mitigation and adaptation projects. This involves not only the immediate reduction of fossil fuels to reduce the continued added impact of CO2 and other gases on the atmosphere, but also the need to address the broader scope of sustainability that will continue to be severely impacted by climate change if business practices and processes continue as usual. General scientific consensus urges action now, to accelerate programs and business using radical changes to address the well-being of people and their environments overall.

Yet, it is clear from the general malaise and common policy agreements that change towards sustainability is complex and poses many barriers to development. Sustainability has been referred to as a complexity of dynamically interrelated ecological, social, cultural economic and psychological (awareness) problems that interact and converge in the current crisis to impact on our unsustainable civilisation (Wahl, D.C, and Baxter. S (Spring, 2008)) Further, designing for sustainability not only requires the redesign of our habits, lifestyles, and practices, but also the way we think about design. Sustainability is a process of coevolution and co-design involving diverse communities in making flexible and adaptable design decisions on local, regional, and global scales. The transition towards sustainability is about co-creating a human civilisation that flourishes within the ecological limits of the planetary life support system (Wahl, D.C, and Baxter. S (Spring, 2008)). It is with this understanding of design challenged complexity, and on the basis that there are "no best practices" to solve these problems, (Stock and Burton 2011), that we explore a developmentally progressive and integrated design approach with the aim of creating practical outcomes to effect global change in the two defined fashion (towards sustainability) case studies.

Context

In both studies the emergent problem was complex addressing a systems move towards fashion sustainability. This represents a move away from a linear model towards the ideal state of a sustainable circular model, bringing in layers of unaddressed problems to meet a sustainable circular model: it was broad in its scope and required many stakeholders to help solve the problem. Firstly, the challenge was to assess opportunities for collaboration to create a circular fashion supply chain, and secondly to ignite a process of co-creating these opportunities. Within these challenges were implicit design research team requirements to help boost technological and social innovation and develop prosperous fashion business opportunities in Hong Kong and China respectively. This aimed to identify and overcome the various roadblocks to achieving these new innovations, and to understand and define how the industry, policy makers and consumers can join efforts to find viable solutions. The workshop aimed to create an impact among the participants on various levels

Studies were conducted in collaboration with the fast fashion chain H&M, Swedish government and the H&M Conscious Collection. Essentially, H&M's role in these case studies was to foster knowledge and accelerate collaborative sustainable solutions. H&M is one of the first movers in fast fashion. They are also concerned and actively addressing their ecological and ethical footprint. They believe in the circular fashion supply chain and are currently placing attention on this framework. In this paper, it is not our intention to explore the sustainability of H&M's supply chain, other authors can be referenced for this (see Shen, 2014). Rather, in this study we refer to a circular fashion supply chain as one that retains the product in the system thereby significantly reducing the requirement for virgin resources.

Among the challenges and innovations required to move H&M towards sustainable practices is a geo-regional concern for the lack of quality governing recycling plants in China. This includes the collection, separation, cleaning, fabric recycling and distribution of all used garments.

This paper will focus on the benefits of research methodologies and the potential to create a transdisciplinary system, within a specific framework, to address the set of challenges faced in creating systemic change towards sustainability in the fashion supply chain. The two studies will be used as reference point. While both studies followed the same developmental and content flow, it should be noted that the two city studies differed slightly in their research output goals. The topic of discussion varied, whereby the workshop in Shanghai placed greater emphasis on infrastructure, techno-social-environmental innovation at a systems level, whilst Hong Kong placed emphasis on creating a systems momentum from the bottom up, thereby reflecting the different cultural concerns in each geographic location.

Shanghai

The overreaching aim of the study was to assess the techno-socio environmental opportunities for innovation and collaboration to move towards a "circular fashion supply chain" and to lead this from China. The latter is important to achieve a new vision and not least for H&M, as much of its volume producing industrial parts of the circular supply chain reside in China. It is this scaled volume that supports the H&M fast fashion global model. Yet, if China cannot catch the next wave of a techno-socio innovation towards sustainability then perhaps business will need to move to other more flexible and future-ready countries.

Due to the emphasis on technology and innovation in this group there was a greater presence of material and manufacturing plus innovation, including five H&M global award (fashion sustainability) winners who were also present at the workshop. This group of inventors independently works on ways to reduce the impact of fashion and improve the efficiency of a "circular fashion chain". These innovations include using new fabrics from natural plants and implementing technology to recycle old garments, for example.

Hong Kong

The aim of the workshop was to assess, define and develop how and what is needed to create an impactful movement towards a circular fashion future in Hong Kong using a bottom-up, human-centered, "design-led" intervention.

The belief, among the organisers, as validated by recent research, is that there are many bottom-up initiatives in Hong Kong working to engage fashion-prospective shoppers, to enjoy fashion in a more sustainable way. This includes start-up activity including rental services, upcycling design, used garment collection, vintage shopping and clothes swapping as examples of Hong Kong based initiatives to keep garments within a circular system.

Further, inbuilt goals were identified to assess the opportunity for building bridges between existing initiatives, leveraging action and impact by unleashing barriers or creating new momentum. This included an assessment of challenges that need to be overcome to make sustainable fashion options easily accessible to more people and to address the question of "what will it take to engage Hong-Kongers to move beyond old habits and make more sustainable fashion choices".

Methodology

The methodology includes both a multi disciplinary approach, that of gathering expert opinions and perspectives amongst both academic and non-academics prior to the workshop, followed by a transdisciplinary dialogue in the workshop enabling co-creation and participatory development towards practical outcomes for change. See Figure 1. The approach uses a 4-step process:

1) Empathise: Multi-disciplinary data gathering for research analysis
2) Synthesise: Re-frame the system towards sustainability: mov from a linear model to a circular model. Set a new vision, identify key contributors to the system, areas for discussion on challenges and opportunities
3) Ideate: Workshop knowledge sharing, trans-disciplinary design dialogue
4) Workshop feedback: To understand the benefits and pitfalls of this approach from in-depth individual interviews and survey among stakeholders

In this case, when we refer to a multi-disciplinary approach we mean: that the research is coordinated to gather contributions from a disciplinary professional perspective on the issue in focus; (Attwater, et al., 2005). It is for the purpose of the researcher to synthesise the different perspectives, (Max-Neef, 2005), as there is little opportunity for the disciplines to integrate or to discuss their opinions and perspectives at this stage (Tress, et al., 2005). Beyond this, and unlike the more frequent use of the term 'multi-disciplinary', which refers only to academic disciplines, in this study we use the term more loosely and gather opinions from both academic and non-academic participants.

In this case, when we use the term 'transdisciplinarity' we refer to an integrated design approach enabling dialogue from many disciplines, both academic and non-academic, supporting a holistic approach that is focused on complex system problem solving to design for practical solutions. For more reading on the definition of transdisciplinarity see Stock and Burton (2011).

A human-centric systems and design thinking approach was used to achieve an integrative, developmental process and transdisciplinary design dialogue within a workshop environment. Boundaries were set so that participants were strategically chosen as active decision-makers and/or influential in the fashion supply chain. The range of stakeholders included government officials, policy makers, circular economy experts, global fashion brands, NGO's, start up businesses, strategists, media/social media, academics, innovators (material, industrial), 'eco' fashion designers and consumers.

To reframe the problem within a circular system, and to optimise the holistic sustainability potential, the design team ran in-depth interviews among a wide range of supply chain stakeholders, to garner expert knowledge and opinions on the current status including: operations, new research, challenges and opportunities.

In this case, a reframing technique was used in the workshop to achieve the following:

- Visually provide an alternative to the "industry status quo": move from a linear model to a circular system
- Provide a space to share knowledge and a catalyst to discuss, why and for what reasons this new system should exist, grounded in the field of practice and expert knowledge synthesised by the design research team along with emerging techno-social-environmental trends and a new vision towards sustainability.
- Serve as a new point of departure for discussion: aiming to visually represent the challenges and opportunities
- Create visual clarity on weak system linkage across different levels: from infrastructure through to communications and knowledge to enable a move towards greater sustainability in the supply chain.

A soft systems tool set was created from a mix of design thinking, systems thinking and business disciplines. They were used to enable "engagement exercises", and included although not restricted to "conversation maps", "stakeholder analysis" and "future scenario planning tools". The latter enabled debate around innovative and collaborative opportunities and identified the challenges faced in creating a new circular supply chain vision in the fashion design industry providing solutions, including a road map for future stakeholder actions.

Process

Reframe Towards Sustainability

The workshop started by reframing the future vision of the circular fashion supply chain. This reframing exercise was based on an informed knowledge of the fashion industry, the challenges and the opportunities to move towards the implementation of a circular supply chain, in part or as a whole.

This helped to move thinking from a "status quo" linear business, with each sector working in a non-collaborative format, towards a connected and multi-dimensional model. All actors were given an introduction to the current knowledge, both in terms of challenges to the fast fashion business and the perceived opportunities. In addition, all stakeholders were invited to locate themselves in the circular supply chain to provide visual cues as to the "connections" that could be made between participants and the roles that each individual plays within the system. Following this introduction, stakeholders were organised into pre-assigned "mini strategic" groups with each group consisting of a mix of transdisciplinary stakeholders representing different areas of the fashion supply chain.

Knowledge Sharing

Each group interacted between and among themselves while working on tasks. The first group exercise was to create a "conversation map" to answer the question: "How can we change the game " with reference to the circular fashion supply chain.

Envisioning

This was followed by future scenario planning to explore the concepts supply chain viability, desirability and impact.

Scenario Planning

Finally, each group completed a stakeholder analysis indicating the responsibilities of active stakeholders, the roles they could play and the deliverables required to bring this business concept to market. Throughout the workshop there were frequent opportunities for interactive discussion, reflection and iteration.

Feedback

Following the workshop a combination of in-depth interviews were conducted accompanied by an online survey completed by workshop participants. The key goals of this follow-up were to understand how the approach actually met the goals of addressing complex problems in a collaborative way that could lead to change and co-creation from the perspective of the participants. Specifically, what were the key benefits of using this type of approach with a trans-disciplinary design dialogue that represented the expertise of the potential stakeholders in a circular fashion supply chain: In what way did this workshop help move the discourse and action towards sustainability, what were the key benefits and to whom and for what purposes? What did participants take away? What was the follow up and what are the levels of openness, trust and acceptance in working this way?

Findings

Workshop Feedback: Reframe and Transdisciplinary Design Dialogue Key Stakeholder Benefits from Attending the Workshop

Overall, the use of this methodology was thought to be a new way of working, entering into engaging and actionable dialogue that was harnessed by stakeholders who are actively involved in the fashion supply chain. The key to this success was the trans-disciplinary nature of the workshop as it strategically brought active and influential stakeholders together and created "a platform to exchange policies, technology and information in an unconventional way (between governments and all stakeholders) and a way to brainstorm new ideas" (Shanghai Govt). This system defined stakeholder group was found to rarely, if ever, come together so that creating a system-wide design dialogue "that connected people of the same interest from other disciplines" was said to be "really useful" as it allowed everyone to tackle "hands on issues". The design-led tool set enabled an engaging, interactive and motivated dialogue around shared interests towards actionable outcomes that surprised many participants on how rapidly ideas could be developed and iterated.

The opportunity for collaboration and learning among participants was perhaps inherent in meeting with this diverse group of stakeholders. Yet, the level of open, rich and involved dialogue, readiness and clarity to collaborate surprised many participants. Organisers voiced their surprise at the "Real interest to discuss and address the issues in the new system" and the opportunity for " Open collaboration and encouragement for private industry to collaborate with the public sector". The government was equally impressed by the level of interest and encouragement for collaboration between the public and private sectors.

Re-framing the system in this new framework provided a structure to advance discourse and create opportunities for innovation and collaboration. Further, the visual inclusiveness of the reframed system provided recognition for all stakeholders, such that each felt that they could participate equally and contribute to new systemic development. The latter enabled a perceived new distribution of ownership and, as a consequence, more willingness to participate and drive the new system successfully.

The visual "re-frame" accompanied with the knowledge exchange, demonstrated knowledge in the field providing a focus for discussion and debate. It also created an environment of mutual respect between stakeholders and the research design team. This quickly transitioned participants to "thoughtful discussions around innovative business solutions" leading to "creating a different connected system". Participants believed in the potential system whereby one academic innovator and winner of an H&M Global award felt that, "the presenters really nailed it" and that, "this is the best session" that he had been to, even though he "has been to a lot". This respect and belief in the proposed vision, we believe, based on workshop feedback, led to a very open, thoughtful, thought-provoking and energised dialogue towards action-orientated scenarios.

During the workshop many of the stakeholders became aware of mutual and concurrent interests and parallel developments on similar topics by other stakeholders. This realisation through trans-disciplinary design dialogue led to increased energy to continue the work towards sustainability and opened the doors to collaborative development.

New Learning and Interest

Within the strategic mini-groups the tool-set enabled dialogue leading to an appreciation of learning from an exchange of current activities and challenges among the stakeholders in this "new system". It became evident that there is a huge lack of knowledge exchange and of current awareness of the activities, projects and goals between the private and public sectors and to a similar extent among other stakeholders in the "fashion supply chain". For example, the government learnt that the private sector status was already further along than they realised. Also, that while policy was clear in the governmental mindset, it was found to be conflicting and create an inhibitory "grey zone" for much of the private business sector.

There was also a clear indication that government and private business could benefit from closer development.

The exchange of knowledge happened naturally in this framework. Stakeholders represented a mix of different cultural, business approaches and expertise, so not only did each participant contribute on different aspects, they also learnt about new aspects from other experts. This led to new ways of considering their business within a holistic sustainability model, potentially providing catalysts to propel and accelerate innovation that might lead to new ventures, different positioning, product offers and/or communications.

From the perspective of academic participants, both from the disciplines of fashion and sustainability, this methodology was found to lead to deeper and broader learning about "the fast fashion industry" that stimulated ideas for development, topics to tackle with students, add to course curricula to further enable principles of sustainability to be shared across diverse topics in an in-depth way (albeit in this case it was the fashion supply chain).

The private sector needs government and policy to support this move towards sustainability as was clearly voiced and discussed in the dialogue. This study revealed that many of the fashion stakeholders, including manufacturers, mills, global brands and independent eco-designers, found that government policies on the topic of recycled clothing were conflicting, leading to a lack of business incentives to invest in this field.

Young entrepreneurs, perceived that they received first-hand experience in the holistic market place, from discussions on the applicability of different business models that enabled them to gain a much richer understanding of how they might change, challenge or fit within this new system in the geo-political region of China and Hong Kong. Given this opportunity to participate in this workshop, they felt a feeling of strength and collaboration.

Unexpected Dialogue and Learning

Due to the apparent lack of collaborative development and exchange of knowledge in the current linear system among the majority of stakeholders, participants were surprised to learn about other stakeholders' actions and missions towards sustainability: this included private with private and public with private. There was a quick realisation that there could be better synergy starting with improved channels of communication.

One specific area that resonated across the board, as a challenge for improvement, albeit for different reasons depending on the systems cycle, was the collection, recycling, and distribution break in the system. The latter was made very clear by reframing it into a circular system towards sustainability. It was evident that if the goal is to move closer to a circular fashion supply chain then the most prominent gap is the lack of infrastructure capable of meeting the needs of the industry for collection, recycling and re-use of garments that are already in the fashion system. Both China and Hong Kong do not have an operational system that can provide international companies with a quality service (controlled to meet global compliance standards). Both lack a functional compliant infrastructure. Collected garments by global retailers are most frequently exported by global retailers for recycling at collection/ recycling plants that meet and deliver on global compliance. Indications from both global and local manufacturers collecting garments are likely to remain at a minimal level until a quality infrastructure that meets global compliance standards is implemented with government supported policy in China/Hong Kong.

Other areas that participants found unexpected included: the number of start-up initiatives in this category that are in operation yet have a limited reach; the speed with which an expert transdisciplinary group is able to brainstorm and find solutions for given challenges and the development of new ideas that had not been thought of prior to the workshop.

Motivation and Inspiration

From the stakeholder perspective, the workshop provided a novel and inspiring way to be involved in a transformation process that could benefit all stakeholders. The reframe and knowledge-sharing session were perceived as new and inspiring creating both an ice-breaker and a platform for interactive communication that explores area of development on all sides. Further, the visual reframe locating all stakeholders, led to a feeling of inclusion and motivation as part of something bigger, energetic and realistic. While some public stakeholder representatives were particularly cautious prior to the event, once part of the trans-disciplinary dialogue, there was a realisation that sharing and building together was constructive, positively received and new collaborative proposals thereby emerged.

Innovators expressed a feeling of being part of something bigger with the potential to redefine the future; whereby they are part of that future. This aspect was found to be highly exciting and inspirational, motivating them to continue and renew their focus on the transition to sustainability that many voiced as a tough road.

Across the spectrum of participants there was an appreciation that improvements in the "circular fashion supply chain" at specific points can positively affect other areas of the supply chain, yet at the same time there is a requirement for collaboration to achieve these goals. The latter was recognised as a "eureka effect" as stakeholders worked through solutions to improve one part of the supply chain, and were inspired by how this could lead to better solutions overall. The outcome was to create learning and opportunities for 'doing' affecting all points of the supply chain such that academics could contribute to new business models and global retailers assessed the opportunities for collaboration on new and

groundbreaking initiatives. Those leading the change from the bottom-up, such as eco-designers, innovators and small start-ups, gave the impression of experiencing isolation. This format enabled them to feel part of something much bigger and with a greater impression of success providing renewed energy and further opportunities to collaborate and approximate their integrated position within the system.

Outcome: Beyond the Workshop

Notably participants requested further opportunities to continue the dialogue. Yet, in parallel many participants are in the process of developing collaborative groups based on the workshop. Specifically, innovators and start-ups are currently setting up working relationships, whilst government and private groups are now connected on key issues and exploring opportunities to develop technology to support this new system.

Academics responded very positively to the nature of the learning, as well as the opportunity for further collaboration and the integration of the new learning into their higher education curriculum. Design innovators said that they were motivated by the topic, felt inspired to further contribute to change beyond their own "business needs" and help to solve some of the bigger infrastructure challenges and the way we do things.

The methodology, whilst it was found to be an impressive tool to develop ideas and unleash barriers to advance developments, was also perceived as a way to inject and scale new concepts tackling a shared business challenge (on the road to sustainability) into a broad and active stakeholder environment. For the design research team, there are open opportunities to continue to design dialogue to explore, support and propel design solutions that foster the core elements of sustainability within this new framework.

Workshop Improvements

Suggestions were made on how to improve the workshop. The main feedback areas, for development and consideration were both strategic and logistical. From a strategic perspective participants requested that the organisers propose next steps to continue the dialogue and action outcomes. Logistically, several points were made; the team should address the time duration of the workshop: as the workshop reached "boiler plate" speed (Strategist) towards the closing half hour. Secondly, it was suggested sharing the profiles of each participant either prior or during the workshop, and thirdly, to expand the specific topic of discussion in each group so that each small group tackles a different challenge in the new system.

Key points in summary

- An open and hierarchically flat platform of experts in different fields that acts to bring usually discrete players together to address, complex, system issues, and create actionable better ways of working

- The potential to accelerate category innovation towards sustainability
- Re-framing from a linear model (business as usual) to a new visualised holistic system acts as a spring board to advance awareness and discourse towards a new sustainable fashion supply chain system
- Further, acts as a new framework to address transformative challenges collaboratively.
- Knowledge sharing provides a holistic aspect of progress and potential towards sustainability and also clarity of barriers to further development

  - Improved knowledge alignment
  - Enables a swift recognition of areas for development, innovation and collaboration
  - Awareness of other stakeholder's activities and the challenges they are facing. Including a realisation that many are already tackling similar issues independently
  - Identification breaks in the system, enabling diagnosis through dialogue
  - New areas for techno, socio, environmental innovation brought to the attention of groups that had previously not considered the need for these solutions.
  - Develop deep stake-holder-ship and lines of responsibility.
  - Inclusive nature of the new system led to a high level of energy to collaborate and lead the change (to be on the next wave)
  - Knowledge sharing first hand led to rapid learning and iteration: cross discipline, culture, and business-model.
  - Different perspectives and experiences, around a common challenge, led to rich dialogue: breadth and depth
  - Found to be interactive, motivating, engaging, leading to idea generation feedback and iteration scenarios happening in rapid progression
  - Perceived as an unconventional approach
  - Move from perceived isolated "events" to connected stakeholder progress towards shared visions.
  - Opportunity to tackle identified and meaningful challenges, together, through new collaborations and with a view to create new opportunities or stronger collaborations that may lead to greater success rates
  - Knowledge exchange can lead to better policy and business planning, positioning and communications
  - Incited renewed energy to continue on a challenging path towards sustainability
  - Created Underlying belief that the circular fashion supply chain is potential reality
  - Potential new distribution of ownership to drive system success

- Post workshop

  - Collaborative opportunities seized and developed post workshop.
  - Desire expressed for continued dialogue
  - Personal motivations expressed among participants to be participatory developers.
  - Designing the dialogue groups Logistics/discussion

- Small well-balanced groups (i.e. mix of experts from different disciplines) enabled a way for participants to positively interact share ideas, challenges and opportunities, create solutions

- Micro-groups, created to reflect the macro mix of participants, proved to create productive "microcosms of creativity". Discussions were described as captivating, interesting and rapid with surprise expressed on how rapid teams were in tackling challenges and arriving at collaborative actionable solutions.

- Each member of a micro-group was able to contribute from their individual perspective build on the knowledge available and appreciate others perspectives and actions. There was a general consensus that each participant could collaborate and contribute towards creating new opportunities and participate in the road map to make the vision a reality.

Discussion

This discussion will reflect on the methodological approach used in the 2 case studies, exploring how through its developmental and integrative nature it was able to: a) create a new collaborative framework in the sense of (Manzini, 2015); b) start to move towards the creation of a meta-design (Wood, 2008); c) move beyond issues that have been found to hinder transdisciplinary research and, d) enable the designer to be central to development.

This methodology takes a holistic approach to the fashion supply chain and starts to create a transdisciplinary system to create change towards more sustainable practices in this domain. The strategic design team created a potential new collaborative network, (Manzini, 2015), with a vision that converges the social, environmental and economical outcomes, comprised of a range of global and local enterprises, start ups through to government and social media. This framework enables all stakeholders to contribute and feel ownership in the design process through the use of a multi disciplinary tool set.

Whereby the boundary was set around the fashion supply chain and its influencers, the designers operate within this system. We can further think of this methodology as the start of a realisation of a meta-design 'a holistic approach looking at the entire context in which the designer and the intended design operate' (Black, 2008). The premise for development, by John Wood, was based on the realisation that while designers are now, "recognised as important catalysts for economic growth" few are able to "think deeply about ethics or know much about eco-design methods" (Wood, 2008).

By taking this holistic approach, we can reflect on this new fashion supply chain system to understand how to better prepare designers and their research for this specific meta-design. In this context, it is clear that the designer should be prepared to work within a systems environment and to understand the boundaries of that system and specifically to know the opportunities, pitfalls and new relationships of the specific meta-design, in this case, the fashion supply chain. Wood noted that "It is within this framework that designers can contribute a great deal more" (Wood,

2008), yet he further advised that “governments, industries and educators have yet to harness the full potential of designers as social and ecological entrepreneurs”. From these case studies, this design-led methodological approach, that includes the broad span of policy, educators and industrial influencers, provides a new way to start to realise this potential. It places the designer as co-creator and at the center leading to deep, rich, dialogue and rapid and experienced-based learning and iteration towards change and sustainability.

Core to the success of this methodology is the quality of the synthesis and “reframing the challenge” should be noted as one of the keys to affecting a meaningful dialogue. The two steps, “reframe” and “transdisciplinary design dialogue”, were found to feed off one another as the quality of the reframe and knowledge-sharing conveying the potential of a realistic new vision was observed to be reflected in the quality of the transdisciplinary design dialogue. Participants felt that they entered into a convincing new system with real business opportunities, that through discourse and collaboration they could improve their current initiatives. Innovations discussed were either perceived as new or better informed to previous thinking and held the potential to be developed collaboratively with a view to maintain business currency and place their business on the next techno-socio wave. From a research design perspective using this process, the designer is center to development and can develop rich iterative feedback by using a quality reframe of the system with proposed opportunities and challenges within a trans-disciplinary design dialogue. This developmental process enables a rapid cycle to create and learn through participatory development by all stakeholders.

The methodological approach laid out in this paper has enabled us to address some of the common recurring issues found when conducting transdisciplinary research, that Stock and Burton (2011) discuss; that we have summarised as, resistance to work beyond discipline, language barriers, boundary emphasis and implicit meanings and assumptions. The research findings from these case studies, indicated that the developmental and interactive nature of the research methodology that included a transdisciplinary dialogue was able to move successfully beyond these barriers.

The methodological approach was set up to address the issues, in part and in combination, by using the following techniques. Working with boundary lines prior to the workshop, and by re-setting these around the category explored. This helped to move individual representation beyond its own discipline and into a co-operative group structure. By reframing the category and providing a knowledge-sharing session this helped to align knowledge, lower barriers to resistance, diffuse the resistance to knowledge exchange and so reduce participants perceptions that they knew more than other participants, thereby leading to improved and open exchanges. Language barriers were also highlighted due to the politics of identity. Within the disciplinary boundaries we addressed these potential barriers, by using a design-led, soft systems tool set throughout the transdisciplinary dialogue providing opportunities for the meaningful flow of shared language. Finally, the explicit nature of the use of the visual representation of the “re-frame”, whereby stakeholders were invited to interact with the visual, and place themselves within the system, accompanied with the knowledge sharing session, followed by in depth dialogue, worked in a supportive manner to draw out individual meanings and assumptions so that they could be discussed and evolved and become part of the discourse.

This approach demonstrated the need to work beyond “current” invisible yet applied boundaries that limit the scope of individuals and business. In a global and business climate that is in need of rapid disruption there is clear benefit to redrawing the boundaries of business so that trans-disciplines can work together to help solve complex sustainability issues requiring optimizing against socio-technological environmental and economical outcomes. As demonstrated by the “micro groups”, the number of stakeholders does not have to be huge, but it does need to be strategic. In this case, the micro groups aimed to reflect the key active and influential stakeholders on the proposed new system. The role of the designer can help to create these strategically defined transdisciplinary design dialogues to envision transformative change.

Conclusion

Through using a developmental approach, from gathering multi-disciplinary expert knowledge and opinions to framing a transdisciplinary dialogue, we were able to achieve mutual learning on the move towards sustainability, participatory development and co-creation. In the workshop, all stakeholders increased their knowledge and understanding of the potential of a more socially and environmentally conscious fashion supply chain as visualised using a “circular system” embedded in the concept of sustainability. This change was realised by engaging in an alternative framework, that set an authentic new vision, aids identification of opportunities for innovation and challenges, that are already visible in the system, and addressed them using a transdisciplinary design dialogue. The new system considers the techno-socio-environmental and economic factors. The combination of “reframe” and “transdisciplinary design dialogue” provides a space to share knowledge and a catalyst to advance discourse on why, how and for what reasons a new system might exist and develop, grounded in the field of practice and expert knowledge; synthesised by the design research team along with emerging techno-social-environmental trends and a new vision towards sustainability.

The convergence of the different stakeholders enabled the majority, including the design research team, to develop a much deeper understanding and clarity of what can be achieved and how that might be done in the greater belief that change can happen and an opportunity to remove development barriers can be created. As a result, stakeholders were able to clarify their potential roles and to better understand how they might collaborate and take next steps to engage with the vision towards sustainability in the fashion industry sector.

In these cases, the transdisciplinary design dialogue led to the exploration of potential benefits and challenges of how a new system might work. This proposed system change enabled stakeholders to focus on the development of new and innovative ways to achieve a more circular fashion system towards sustainability, that they felt they could own, is perceived as visionary, beneficial for all stakeholders and results in ethically good practices, employs new technologies and creates simpler communications for consumers: to engage and also drive action from the bottom up.

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Remake: an open and co-design process for sustainability through making

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ABSTRACT

Issues of sustainable design are often complex problems at the intersection of large groups of diverse stakeholders and actants. The collaborative approaches of both Open Design and Co-design are well positioned to tackle these 'wicked' and interconnected design problems through engaging and empowering these stakeholder groups. This paper explores how a design platform can be established that combines the grassroots horizontal collaboration of the maker movement and the ability of generative Co-design to work within hierarchical expert knowledge structures. A mixed engagement with these methodologies has been established through the creation of an open maker-space in which to concurrently host both; making activities, and co-design workshops with expert stakeholders, centered around a project of material reuse.

This participatory maker space sits within a year-long project working towards developing ways to reduce vinyl-coated- fabric waste and promote opportunities for circular economies. Each year over 5,000 tonnes of this waste goes to landfill in Australia alone, with 500 tonnes of that attributable to advertising banners; a material that has become the focus of the project. A group of expert stakeholders across the entire supply and value chains, led by the Vinyl Council of Australia and Monash University convened with the strategic aim of innovating towards sustainment through a rich combination of making and co-design processes. The outcomes of this was a range of Open Design possibilities to be developed further for possible introduction to the market, while simultaneously establishing a diverse and collaborative community of practice around the issue of material reuse.

Keywords

open design, making, vinyl reuse

INTRODUCTION

Designing anything with an understanding of sustainability involves acknowledging and engaging with the complexity of the network of actants that the product, service, system, the material will operate within. These networks are vast and transdisciplinary, consisting of stakeholders acting across and within multiple disciplines and backgrounds. These stakeholders and networks do not always actively engage each other or consciously collaborate in design. This paper explores how industrial design practice can engage within the complexity of these networks through a case study in designing circular material reuse. Our aim is to facilitate not only the creation of products but the circular material flows that support these products of design, sustainably (Braungart, McDonough et al. 2007). Open design (specifically within 'Maker' culture) and co-design methodologies are leveraged for this exploration, as both methodologies provide toolkits for engaging complex stakeholder groups collaboratively. Although, these methods often are practiced within different collaborative mindsets; open design typically being practiced with a horizontal peer-based and 'grassroots' approach to collaboration (von Hippel 2005) while co-design seeks to empower non-expert 'designers' (Sanders and Stappers 2012) while working within the typical vertical hierarchical structures of traditional manufacture. An attempt to combine these different practice mindsets asks the questions; how can co-design tools be leveraged to bring multiple stakeholders into the process of open making? How can these tools establish empathy for the distinct mindset of the 'open maker'? How can these tools concurrently empower makers within the hierarchical structures of traditional manufacture?

Within this project and paper, we explore how a platform for design action was established to engage consciously across these two mindsets, establish empathic engagement between diverse stakeholders, and foster the creation of a rich community of practice consciously created by design (Manzini and Coad 2015). This mixed methods engagement has been established through the creation of a participatory 'makerspace' within the open design ethos. This space hosts both hands on making activities, and co-design workshops concurrently with expert stakeholders. These activities are grounded within a project of vinyl advertising banner material reuse (figure 1.) — the goal of which is to co-create a circular life-cycle for the material, guided by makers, informed by experts, and within a community of expert practice.



Figure 1. Advertising banners ground into a new material 'nutrient'.

CO-DESIGNING CIRCULAR MATERIAL FLOWS; A CASE STUDY WITH ADVERTISING BANNER MATERIAL

Context

The hybrid participatory makerspace and space for co-design, detailed within this paper, sits within a yearlong project working towards the development of processes and products to reduce vinyl-coated-fabric waste. This project aims to promote opportunities for circular material flows centered around this material 'nutrient' (Braungart, McDonough et al. 2007). Each year over 5,000 tonnes of this waste goes to landfill in Australia alone, with 500 tonnes of that attributable to advertising banners (Vinyl Council of Australia n.d.). Landfill sites in the Australian state of New South Wales (NSW) are increasingly charging more for disposal of these banners, making the business case for dumping less tenable. This, in addition to environmental concerns, has provoked an industry-led approach to research alternative ways of processing the material.

Advertising banners are a mix of polyvinyl chloride (PVC) reinforced with polyester fabric, which poses a number of issues. The material has mixed polymers, where plastics with different properties and melting points are combined in such a way as to make recycling difficult. It is possible to do so, but the quantities in which the banners are used in Australia, while large enough to support new industrial applications, are too low for dedicated industrial recycling to be a viable way of separating the material back into its constituent parts. Additionally, concerns over brand



Figure 2. Open collaborative maker-space / co-design workshop.

owner protection significantly reduce the ability to reuse or repurpose the advertising banners themselves without reprocessing. Understanding the realities of these conditions have led to a design investigation around how this hybrid PVC/polyester material can be broken down and reused as a material itself, a 'nutrient' within Braungart, McDonough et al.'s (2007) circular model of artificial material reuse. The project seeks to find positive and unique attributes of the mixed material and design artefacts specifically suited to the quality of this material nutrient.

Stakeholder Complexity

To properly understand the complex nature of creating a circular economy for this material reuse, it was imperative to understand and engage with the vast network of stakeholders within the material value chain. The Vinyl Council of Australia (VCA) and Monash University Faculty of Art Design and Architecture (MADA) formed a network of stakeholders representative of the actors within this value chain. This diverse network included representatives from other peak industry bodies, advertising bodies, design professionals, industrial-scale manufacturers, material specialists, engineers, material reprocessors, artists, makers and undergraduate and postgraduate design students. Additionally, the interdisciplinary collaboration extends to a research partnership with the University of New South Wales (UNSW) Department of Chemical Engineering. This partnership sought to understand and document the properties and performance of the hybrid material nutrient.

The Aims of the Project

The primary aim of this design project was to develop circular economies around PVC banners in a cradle-to-cradle approach of 'eco-efficiency', attempting to minimise a product's impact long term (McDonough et al.'s 2007). This approach sees a product as merely one state of its constituent material's use within a constant cycle of material reuse. Braungart, McDonough et al. (2007) model this on the success of regeneration and interdependence of natural systems with the goal of creating cradle-to-cradle 'metabolisms'. Within these metabolisms the materials act as nutrients — all outputs from one process become complete inputs for another. This model sees both no waste and a more synergistic coupling of ecological and economic/technical systems. This project seeks to explore the development of a viable metabolism around this

vinyl banner material nutrient through the development of two (or more) demonstrator products; one 'high volume-high value' and the other 'low volume-high culture'. These two approaches are not necessarily mutually exclusive, but give the advantage of exploring split market appeal and opportunities for cross-reference.

The requirements of commercial viability necessitate the involvement of manufacturers and the other professional stakeholders listed above, while the unique nature of the hybrid material nutrient requires the hands-on experimentation and exploration of the makers. This combined effort provides new opportunities to determine the viability of manufacturing processes and the properties and characteristics of the material while in use. This paper details the project in progress at its midpoint, detailing the impact of the hybrid participatory/co-design makerspace as a bridge between these complex stakeholder networks. The aim has been to interconnect the unique mindsets, approaches and contributions necessary for designing a system of material reuse.

Methodology

The circular material flows that this project seeks to create complexly intertwine with various socio-technical factors. The technical factors of manufacturing and materials require exploration alongside the cultural factors of design, economic and cultural values, and the need for collaborative communities of practice to address the stakeholder complexity discussed above. Braungart, McDonough et al. (2007) reinforce the importance of fostering these open information flows and supporting communities to successfully create interconnected ecological, social and economic systems and material flows. This project seeks to explore how existing product development methods can be leveraged to most effectively design products and processes for circular material use by focusing on a specific material nutrient. The methodological framework combines both hands-on material engagement and co-design integration of non-'maker' and non-'designer' stakeholders within the design practice.

The project timeframe allows for extended generative design cycles, giving it discursive design opportunities over time. The process launched from work undertaken earlier in a previous collaborative project undertaken in 2015 (see Richardson 2015) where a range of techniques were explored for material processing of the pure banner recyclate (generative design cycle 1). In the initial months of the current project, these material outcomes were subjected to a range of tests by chemical engineers at UNSW to ascertain whether their properties were applicable for reuse in new commercialisable products. Concurrently, industrial designers at Monash University planned the makerspace and prepared machines to be used throughout the participatory design workshop providing the grounding for the ReMake workshop (generative design cycle 2).

The ReMake open co-design makerspace, explored within this paper was undertaken over an eight-day timeframe and explores the next generative cycle within the project. This temporary makerspace (Figure 2) was created to form the collaborative, physical, nexus between divergent stakeholder groups. Within it, the stakeholder community convened and was asked to alternate between both hands-on engagement with the material ('make') and say and do co-design activities (Sanders and Stappers 2012). This alternation of modes was consciously designed to establish an exchange of information between stakeholders of varied mindsets and foster the empathy needed to establish an ongoing and robust community of practice (Manzini and Coad 2015).



Figure 3. Experiments in rotational molding.



Figure 4. A space to say and do

The public gallery within the Monash University Faculty of Art, Design, and Architecture was intentionally chosen as the space to locate the collaborative maker-space and co-design workshop, allowing a wider engagement to take place with the students, researchers, staff, technicians and members of the public passing through the faculty. In addition to the invited guests and stakeholders, this helped widen and strengthen the community of practice. The space itself consisted of a variety of tools for making, spanning across material states from raw banner material to loose pulverised fluff, pelletised recyclate, press formed tiles, and heat rolled skins. Within it, a variety of experiments in making took place with industrial methods such as rotational molding (Figure 3), 3D printing, press forming, vacuum forming, compression molding, injection molding and industrial sewing; occurring alongside hand-made maker and craft approaches. In addition to the machinery, dedicated space for say and do co-design workshop activities was established (Figure 4).

Make; An Analogous Process to Build Empathy

An analogous action-oriented activity was devised to engage the stakeholders in the process of making. This was to achieve two aims; first, to engage the non-maker experts to experience the process of reforming the material quickly and tangibly; second, to engage with the unique materiality of the hybrid material. The hands-on activity challenged them to reveal the possibilities of the material, which helped position stakeholders within the projective mindset of the designer (Findeli 2010) for the duration of the co-design activities in the makerspace. This activity was also intended to trigger new ways of thinking, and new conversations among participants, through engaging with making as a mode of knowledge generation and inquiry. It is hoped that, by building an experience of transparency and empathy between these different mindsets, these sentiments will be carried on in their work on the project in general.

This analogous process began by demonstrating the material nutrient, regrinding the complete advertising banners into a loose pulverised fluff. Stakeholders were then encouraged to reform the regrind into the new hybrid sheet material, using household sandwich presses (Figures 5 and 6) as an analogy for industrial heat-press forming. This activity also acted as a way to consciously reframe the participant's view of the banners away from that of a product, and towards a view of the banner material as a material nutrient within a lifecycle perspective. Stakeholders then used the heat pressed material (Figure 7) to create simple products such as wallets, keyrings, pen-holders, and other representative objects (Figures 8 and 9) using maker and craft processes. This material engagement was also designed to challenge the 'industrial' expectations of the industry stakeholders, challenging them to engage with the materiality according to the cultural requirements of the brief.

These hands-on 'make' activities were complemented with the say and do co-design activities (Sanders and Stappers 2012). These focused on the goal of allowing the expert stakeholders to assist designers and makers to map out what they all saw as successful and unsuccessful possible uses for this material nutrient. The space also served as an avenue for reflection and comment alongside the projective making and design activities.

Say and Do; Co-design Activities

Before the co-design session, a digital cultural probe (Gaver, Dunne et al. 1999) was delivered to all participants, asking them to respond to similar design precedents of products and processes focused on material reuse (Figure 10). Results from this sensitizing activity were transferred into graphical form and presented for comment within the workshop (Figure 11), allowing stakeholders to elaborate on their responses and foster rich discussions around possibilities for desired outcomes, and concerns for the project between diverse stakeholder groups.

The previous say, do and make activities allowed various stakeholders to gain empathic insight into the concerns and methods of the other diverse groups, this knowledge exchange occurred in both directions between the 'makers' and 'designers' and the expert stakeholders. In this case, neither the say, do, nor the make activities were intended to deliver tangible outcomes, but rather to foster empathy and an intuitive understanding that the designers would be able to draw upon during the design process. The goal of which is to ensure that the concerns and expertise of knowledge revealed by the experts is understood by the designers, and reflected within their designs. Additionally, it is hoped that the expert stakeholders will have a heightened empathic understanding of the design process, which can intuitively inform their feedback and input in design reviews as the project progresses.



Figure 5. Household sandwich presses and extraction as an analogy for industrial material manipulation.



Figure 6. Household sandwich press and heat formed tiles from loose pulverised fluff



Figure 7. Stakeholders remaking vinyl banners into simple products.



Figure 8. Simple products made of reformed banner material

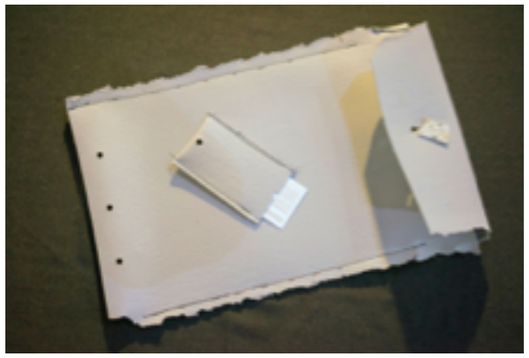


Figure 9. Wallet and laptop sleeve constructed from roll-formed banner material

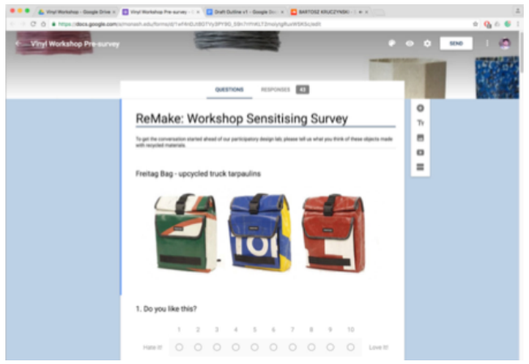


Figure 10. Online sensitizing kit

The above empathy-building activities culminated in an ideation group session using an adapted version of the 6x5x3 brainstorming technique devised by Börekçi (2016), which consisted of three rounds of ideation where stakeholders and designers generated ideas (Figure 12). Participants then spent two rounds responding and building on the ideas of others, resulting in rich collaborative concepts that incorporated the input of a variety of stakeholders.

Ideas generated by the co-design activities continued to be analyzed and explored by designer-makers within the space with a number of drop-in sessions by expert industry members to guide development. The outcomes of the say and do activities were separated and collated into affinity groups (Figure 13) in order to guide conceptual identification and planning. From these groups a range of broad themes were identified and design briefs were formulated and distributed among the core design team members. Each participant developed a range of design provocations (Figure 14) based on their brief, which were then curated for exhibition and documented for further development.



Figure 11. Participant sensitising kit results annotated through discussion



Figure 12. Group ideation



Figure 13. Ideas separated and affinities identified

Exhibition as a Tool of Communication/ Feedback (online and offline)

The work developed in the co-design workshop was presented alongside the outcomes of the master workshop as works in progress, as part of a series of both digital and physical exhibitions. These allowed the makers to reach out and receive feedback on design directions under development, from other expert stakeholders. Additionally, this allowed the makers to ask expert advice, and the experts to remain involved in generating ideas and directions for the project. As social events, the exhibitions also aided in the development and reinforcement of the community of practice established around the project and material nutrient.

These digital and physical, bidirectional exhibition-based communications enabled the stakeholders to contribute to the evolution of the design ideas and directions. Simultaneously, the results of experimentation by the manufacturers and chemical engineers were presented during workshops and exhibition feeding back into the design process and informing and steering the design directions through illuminating relevant technical data and experience. So far, viable experiments in rotational molding, vacuum forming, 3D printing, compression molding, injection molding and roll-forming have been produced (Figures 15, 16, 17 and 18) and designers continue to iteratively prototype and make ideas. This allows the conceptual directions to 'grow' in maturity, from a material nutrient base through to complete and commercially viable products.

Discussion and Concluding Remarks

The in-progress results of this project highlight the importance of embedding the processes of making in design activities in order to allow material engagement to shape the mind and material culture. As Huchins (2008) claims, 'thinking is interactions of brain and body with the world. Those interactions are not evidence of, or reflections of, underlying thought processes. They are instead the thinking processes themselves.' Material Engagement Theory (Malafouris 2013: 15) proposes that the mind is embedded as much in material things as brain-thought and cultural knowledge. Physical engagement becomes a process of thinking and culminates in actions that result in new cultural possibilities. In this way, threads of attachment can form between mind, body, environment and artefacts, transforming material perceptions of materiality from waste to nutrient. Material engagement coupled with a generative design processes acknowledges inherent degrees of perpetual incompleteness in products and systems — that is designs themselves are never final, but represent possibilities on a continuum of material-culture development in our evolutionary cycle (Garud, Jain and Tuertscher 2008) — a core tenet of open design.

Although the project is ongoing, it is evident that the integration of co-design activities within an open maker process have led to richer outcomes while simultaneously fostering a community of practice centered around the problem of vinyl banner reuse. The goal of the activities described here was not just to develop solutions, but, perhaps more importantly, to build empathy among the stakeholders. This improved 'maker' intuition, strengthened by greater technical and material knowledge, and non-'maker' understanding of the process and the projective stance of the designer makers. It was hoped this shared empathy would allow a rich community of practice to develop by facilitating spaces for conversations to happen, and ideas to spread. By bringing together people in energised collaboration, it provided a forum of common ground for stakeholders to discuss and instigate their own parallel collaborative projects that leverage the diversity and common interests of the practice community.

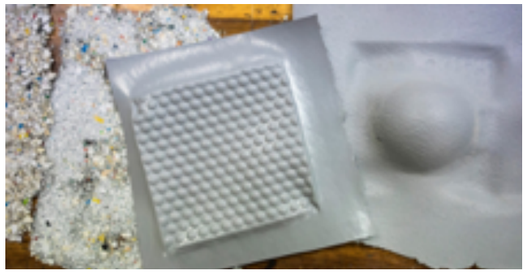
The project demonstrated the potential of leveraging techniques of generative co-design (Sanders and Stappers 2012) within an open design project centered on making. It empowered makers to work within the complex hierarchical structures of the manufacturing industries, allowing shared influence and control over material flows. Similarly, stakeholders from these industry bodies and manufacturers were challenged to engage empathically with the makers to foster viable designed outcomes, while also understanding the diversity of requirements between themselves and other stakeholders within the value chain.

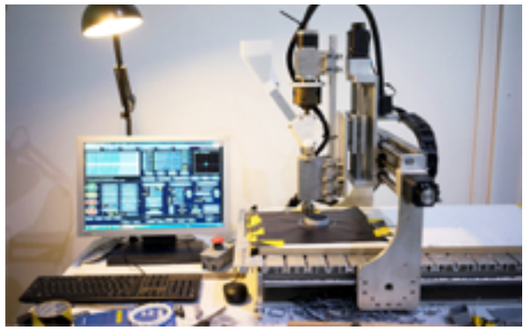
The complexity of the actants and networks around a single material nutrient highlights one of the broader challenges of sustainability; the difficulty in coordinating complex collaborative groups, even when they share common goals and projects. While both co-design and grassroots hands-on 'maker' collaboration can separately provide designers with the methods and frameworks to facilitate these engagements, this case study has highlighted how an integrated approach can tackle the complexity of multi-input sustainable product development. This approach fosters strong communities of practice that are empathic to the diversity of stakeholder concerns and mindsets.



Figure 14. Design provocations







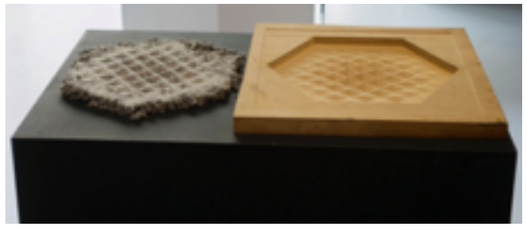


Figure 15. (top left) Rotationally molded vinyl banner recyclate
Figure 16. (top right) Vacuum formed vinyl banner recyclate
Figure 17. (bottom left) 3D printing vinyl banner recyclate
Figure 18. (bottom right) compression molded vinyl banner material

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The environmental terrorist: exploring individual responsibility and emotional engagement through design research to understand issues around climate change

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ABSTRACT

The paper explores the creative ways in which designers and educators can gain situated understandings of issues related to climate change. It uses encounters with a farmer/artist/social designer as an illustrative case. It focuses on a narrative dialogue with the farmer in the form of a series of vignettes, and asks the question: how can individual responsibility situated in an emotional sphere of activity be deployed as a local change agent in environmental issues? As design researchers we wanted to achieve a contextualised insight into the ways in which stakeholders and design educators from creative disciplines at two universities may collaborate to work towards sustainable futures. Through deep immersion in his life story, we also reflected on the skills that designers and design researchers/educators ought to develop to embrace and harness design towards sustainability. Ethnographic design approaches were employed in the paper where visual and sensory methods and techniques were used by the researchers in the encounter with the farmer and in self-reflection about and perception regarding the site of study. The narrative dialogue with the farmer was recorded and life-writing supported by poetry were used. One of the most powerful findings of the research was that when role players in a particular scenario start perceiving the environment from within as participants, nature is transformed into a realm where we are able to live as contributors and not as detached observers or consumers of natural resources to the point of depletion.

Keywords

design research, embodied experience, environmental activism

INTRODUCTION

In a current Climate Change (CC) research project, C-CLIMA-FUTURES: designerly strategies for scaling up climate change approaches in both global South and global North, which began in 2014, adverse circumstances relating to the environment are interrogated in “designerly ways of knowing” (Cross, 1999:5). As creative and concerned design educator/researchers from South Africa and Norway, both of the authors of this paper share some common goals. These include a commitment to quality education, to embed sustainability in the design curriculum, advance diversity and encourage agency in our students and communities.

This paper focuses on reflections that that were made based on a series of conversations between one of the authors of the paper and a farmer, practicing artist social designer, and radical environmental activist called the Environmental Terrorist (a pseudonym of his choice). The Environmental Terrorist (ET) had devoted his life to the local project of combatting ecological degradation on a sea front farm on the South African West Coast. His radical environmentalism involved promoting environmental sustainability through social advocacy, legal battles and art exhibitions that brought the region and its predicaments under the spotlight.

Aim of the paper

At the heart of the CC project, which speaks to the aim of this paper, lies the development of designerly strategies that translate existing knowledge about our stressed climate system into enhanced understanding and effective creative actions through embodied experiences located in the individual and communal emotional remit.

The paper explores the creative ways in which designers and educators can gain situated understandings of issues related to climate change by using the encounter with the farmer as an illustrative case. It focuses on a narrative dialogue with the farmer in the form of a series of vignettes, and asks the question: how can individual responsibility situated in an emotional sphere of activity be deployed as a local change agent in environmental issues? As design researchers we wanted to achieve a contextualised insight into the ways in which stakeholders - the artist/farmer/social designer - from a wide variety of sectors - creative sector, nature conservancy, farming – and design educators from creative disciplines at the two universities may collaborate to work towards sustainable futures as discussed in the Manifesto. Through deep immersion in his life story, we also reflected on the

skills that designers and design researchers/educators ought to develop to embrace and harness design towards sustainability. These skills or sensibilities may ultimately be reflected in responsive curricula and also contribute to "designerly ways of knowing" (Cross, 1999:5) which resists design research being overwhelmed by other research cultures.

Methodology

Ethnographic design approaches were employed where visual and sensory methods and techniques were used by the researchers in the encounters with the farmer and in self-reflection about and perception regarding the site of study. Sevaldson (2010: 19) suggests that the division in design research between practice and theory is about to be spanned "…where reflection and practice are about to be tied together in more intimate ways". In a sense the farmer represented 'practice' and we represented 'theory' in the form of reflection woven together by means of the narrative dialogue.

The narrative dialogue with the farmer was recorded and life-writing (Leggo, 2010) supported by poetry were used, including timeline photography of the farm which was supplied by the farmer. Narrative dialogue in this instance differs from 'ordinary dialogue' or conversation in that the narrator's emphasis is on stories of a personal yet deeply socio-environmental nature. As dialogic partner my role was that of a looking glass; passive in my own position but immersed in the narrative dialogue by reflecting back and clarifying strands of the story to build a full picture. The methodology embraces the concept of emergence – heeding creative, intuitive and unfolding meaning moments (Böhm, 1985) in the dialogue and encounters with him. The paper is written in the form of a series of vignettes (Emerson, et al., 2001), and analytical reflections where we draw on interdisciplinary theoretical literature to frame the discussion.

Process

In this section of the CC project conducted in Lambert's Bay in 2014, I interviewed the farmer after a community workshop that was run by a cohort of staff and students from the two universities (46 in total) with local fishermen and farmers in a community hall. The second interview, the narrative dialogue, occurred roughly a year later in December 2015 to gather in-depth descriptions and stories about his environmental recordings and activities in the area.

The narrative dialogue also included site-inspections of the particular instances of environmental and coastal depletion and immersion in the environment by means of land art and walkabouts. These methods resulted in crystallisation of data (Ellingson, 2009), which in turn helped distil the essence of the lived experiences as narrated by the Environmental Terrorist (ET). During these interviews and activities the Environmental Terrorist and I were present, and a third participant took photographs.

Scene One: the Wadrif

The narrative dialogue commenced with ET outlining the topography of the coastal zone, which is part of the Strandveld (beach veldt) situated in the Sandveld (sand veldt). This biome is located on the West Coast of South Africa where ET was born about 60 years ago on a coastal farm where he still lives. The farm is about 10 km from the small fishing town of Lambert's Bay, which in turn is approximately 350 km northwest of Cape Town. In particular, ET discussed the topographical changes that had occurred in the coastal zone and coastal wetlands as a result of many environmental and climatic changes over the last couple of decades. He recounted his environmental observations and lived experiences over time:

"In the 1980s, the seven kilometre span of wetlands from The Farm to Lamberts Bay supplied such a lot of water, especially in winter, that the area was frequently sodden and vegetables grew abundantly; tomatoes, cabbages, onions, corn, pumpkin, sweet potatoes. But after the increase in potato farming in the mid - 1980s, the vegetable crops dwindled and eventually only the monoculture potato crop flourished. Within 10 years, in the mid - 1990s, the wetlands were dry. The groundwater was depleted because it was pumped out to supply circular irrigation for potato farming. Borehole water used for circular irrigation was responsible for the water table to drop to such low levels that no water was fed through to the wetlands, resulting in amongst others the disappearance of terrapins. Water birds such as flamingos and pelicans in this particular stretch of coastal wetlands also disappeared. Different methods of irrigation are more sustainable, since circular irrigation water loss to the atmosphere equals from 40 to 60 per cent, which increases when the wind blows. The salination of ground water in the coastal zone happens precisely because it is so close to the coast – and the failure of the now depleted groundwater to stabilise the situation. The Wadrif (Wagon river) estuary and the Jakkalsrivier (Jackal river) estuary are depleted of bird life to this day: a 12 km strip where the indigenous fauna and flora are decimated. The status quo of decades has been changed in ten years because of irresponsible and unsustainable irrigation practices. Flamingos have returned in recent years where the wetlands are still active to the East, but not in this particular area. The climate in this time has changed in accordance. Rainfall has become much more erratic; whereas we are used to between 250 and 500 mm per year, not even 100 mm has fallen in 2015. In the last five to ten years the famous wild flower season (August/September) was greatly influenced by diminished rainfall. Much rain leads to a breath-taking display of wild flowers. Last year was average. Vegetation on the dunes (with the depletion of groundwater) dwindled and ultimately the desertification of the particular coastal zone occurred. The municipality in Lamberts Bay had to sink new boreholes much further inland to get better quality and sufficient water to ensure water security.

The water crisis when Wadrif was yielding non-potable water in the early 2000s, was very serious. Municipal borehole water from taps oozed a black gooey substance, unfit for human consumption. I kept a bottle of water from that time, labelled and preserved. Drinking water had to be bought at great cost for a period of time.

Water depletion, reduced rainfall, El Nino at the time, many farmers are just not interested in conservation. They are interested in profit – cash crops – and not sustainable futures. Potato farming sucks the water supply dry.. when I see trucks with potatoes going to market I think to myself: ..there goes our water.."

ET tackled issues of water security and the lack of crop rotation by observing over many years the destruction that the monoculture potato crop brought about. He photographed the crop circles, attempted continuously and through using different strategies to engage the farming community about the destruction of monoculture and circular irrigation, to no avail. His ideas of co-conceptualising a strategy with them never materialised, partly because of the economic pillar of sustainability: profit. Potato fields lying fallow are not profitable. Crop rotation is not profitable in the short term. Implementing a strategy towards future sustainability and water security among stakeholders in this community therefore was well near impossible. I sense that his reflections on these events brought frustration and in turn alienation from many members in the farming community because of his business as unusual environmental attitude.



Figure 1. Desertification of the coastal zone visible on the horizon line



Figure 2. Contaminated groundwater

Scene Two: the coast

The conversation about water security led on to a short discussion about the coastal zone and decimation of fauna and flora in particular areas along the coast. The Environmental Terrorist continued with his observations:

"Dunes are protected and driving in the coastal zone was banned in the late 90s, but 4x4 activity was rife and many nests and sea birds were destroyed. There is a loophole in the conservation law however which permits individual land owners to allow 4x4 vehicles on their coastal zone despite a ban on this activity by law. I do not allow it at all on my coastal zone – but from neighbouring properties people infringe." After three months of beach driving being banned however, ET did notice that birdlife had returned once more. He continues: "Birds use the beach as resting and nesting areas. Flamingos stayed on the beach in the past for a week to rest, although they do not nest there. Strandlopertjies (plovers) and Oyster catchers, cormorants and giant gulls are found in the coastal zone among many other species." Reflection on these events on the part of ET brought frustration and in turn alienation from many members in the farming community because of his business as unusual environmental attitude.

ET tackled issues of coastal conservation by observing over many years the destruction that 4x4 dune driving brought about. He photographed illegal vehicles, took legal action but also attempted continuously and through using different strategies to engage the local community in educational messages about the destruction of the coastal zone's fauna and flora through irresponsible use of the coastal zone. He went further than talking, sinking plastic spikes into the coastal zone area of his farm to arrest vehicular activity by causing damage to illegal 4x4 drivers' tyres. More than educational messages, (or maybe in combination with) this strategy yielded some success. The sustainability dilemma is more pronounced (or maybe more visible) in smaller communities with limited economic potential – profit and not long-term economic sustainability strategies will win the day. Not attracting tourists and weekenders is not profitable. Banning the popular pastime and hobby of dune riding is not profitable in the short term. For the Environmental Terrorist, conceptualising and implementing a strategy towards future sustainability and responsible environmental tourism as an alternative among stakeholders in this community proved well near impossible, again because of his "business as unusual" environmental attitude.



Mirroring a design activism?

Designers and design researchers have a unique contribution to make regarding issues of climate change since their multi-modal ways of thinking, doing and intuiting change, and offering solutions in many fields, are not limited to empirical and scientific lenses only (Sevaldson, 2010).

Our reflections around these issues have led us to ask whether ET's actions might be a useful way of framing a design activism. In our as yet unpublished Providing future possibilities: Manifesto for sustainability in education and design (2016) we recognise that local and global challenges include the impact of climate change, scarcity of fresh water, food security and loss of bio-diversity among many other factors. These, together with financial insecurity, impact people's lives (Dahl, 2016). Three of the six propositions in our Future possibilities Manifesto were connected to specific instances in the text:

1) To develop ties with local communities and empower people to take agency and act for themselves, their community and the environment

2) To develop an ethic for sustainable living by promoting sustainable resource use, conservation, and health and well-being

3) To develop values of respect, integrity, honesty, and patience – and promote trust.



Figure 3. Dikkop nest on the beach



Figure 4. Sign prohibiting vehicles



Figure 5. 4x4 vehicle tracks on the beach



Figure. 6 4x4 vehicle crushing shrubs and nests

Environmental Terrorist's disappointments as a witness to environmental depletion – and his particular and engaged way of being in the world might lead one into "realising future sustainability poses challenges that are increasingly more complex.." (Cumulus, 2016). This complexity is mirrored in the ways that we respond to sustainability through design research which "is in itself a very complex, if not one of the most complex fields of knowledge production… such a complexity demands an equally rich repertoire of interrelated methods and positions" (Sevaldson, 2010:8). Markussen (2013:38) explores design as an act of intervention "..the design act is not a boycott, strike, protest..; instead it lends its power of resistance by being precisely a designerly way of intervening in people's lives". Was this enough for ET? He brought acts of protest, acts of resistance in very real ways with very real consequences – such as instances where he and another environmentalist engaged in acts of extreme disruption in order to drive a message home: from an environmental perspective there is simply not a business as usual option.

From a designerly perspective then, these sensibilities enable designers to contemplate the intricacy of the contemporary world regarding nature and culture and to connect various aspects of people's lives with a point of interest (Brenna, et al, 2010), in this instance environmental conservation through activism to achieve more sustainable futures. As designers researchers we wanted to "consider the complexity and the variety of the contemporary world and act like a link among different aspects which gravitate around a point of interest" (Brenna, et al, 2010). **The first Manifesto proposition** finds a fit here from our point of view and from ET's perspective: to develop ties with local communities and empower people to take agency and act for themselves, their community and the environment. When role players in a particular scenario start perceiving the environment from within as participants, nature is transformed into a realm where we live as contributors and not as detached observers. The Environmental Terrorist illustrated how localised action can be creative and can contribute to commanding environmental responses. Similarly **the second Manifesto proposition** finds a fit here: To develop an ethic for sustainable living by promoting sustainable resource use, conservation, and health and well-being. A creative activist rooted in the community with a deep love of nature, people and justice, he illustrated how individual agency located in an emotional sphere of activity, can offer a commanding environmental response and to a certain extent, be a local change agent. The three P's (tenets) of sustainability; profit, people and planet in this narrative dialogue combined with the three P's of embodiment; participation, person and place to offer a situated, contextualised understanding of issues relating to climate change. **The third Manifesto proposition** finds a fit here: to develop values of respect, integrity, honesty, and patience – and promote trust. The distilled essence of his lived experience pointed to passion, commitment, immersion in the field, sustained intercessions and patience. The embodied experiences of the Environmental Terrorist are a testament to how local deeds of activism contribute to a more sustainable future – a future characterised by a synergistic relationship between humans and nature.

Manifesto tenet 5- Values not value: encourage ethical values and the notion that beings are better than belongings finds a fit here. On a social level The Environmental Terrorist's activism was linked to an inclusive social [design] agenda which he achieved with the annual art exhibition he sponsored and curated on The Farm to give exposure to a local group of artists who would not otherwise have had such an opportunity. Unknown local artists' work is exhibited side by side with established artists. The social design agenda embraces equity and diversity and could ultimately help to "re-design" the lack of social cohesion (Manzini, 2007) in an area afflicted by socio-cultural and economic iniquity.

Local Knowledge

The actions of local actors like ET can be described as being based on what is termed "performative knowledge" (Richards, 1993). This is a type of competence that is "engrained in farmers' time honoured and place-based experience rather than encoded in abstract principles" (Roncoli et al., 2003: 99-100). There is a rich volume of research that has illustrated the importance of local knowledge in environmental and climate change issues (see for example Nazarea, 2006; McDaniel et al. 2005). Local knowledge and experience possessed by local actors such as farmers is being increasingly recognised as valuable assets in developing action against climate change (Nyong, 2007).

The pillars of sustainability: place (environment), people (social) and profit (economy) have been actors in the narrative dialogue with ET from the start. The resourcefulness with which ET worked within these limitations, limitations that can be likened to a structure that contains possible actions, can in a design sense be compared to writing a design brief. The real-life design brief that this social designer wrote can be understood from a "Research by Design" perspective that displays an "insider perspective, a generative approach [which] operates in rich and multiple layers and relates to real life contexts" (Sevaldson, 2010:8).

ET acted upon his real-life design brief by conceptualising and actioning several intercessions in the local context. His situated responses to environmental degradation and the lack of social cohesion in the area included the wisdom of learning from one's own back yard – observing, documenting, engaging the community, conceptualising a strategy, implementing the strategy, reflecting and back to observing: all designerly tools. His strategy consisted of daily observation of the environment, documenting through photography the coastal zone, indigenous shrub vegetation called rhenoster bos (rhino bush), and the inland dune zone to gauge the state of dune vegetation. The farmer engaged the community on many local platforms to further the debate about environmental challenges and social challenges. As a member of the local festival committee he proposed events and solutions that would benefit the community at large and which might serve as social glue. Identifying common interests and goals started forming the social glue, but to this day the community remains largely divided. ET is also the organiser of an annual art exhibition on The Farm that aims to showcase local artists together with national and established artists. His strategy of engagement with relevant stakeholders regarding environmental and social awareness and development however, did not always stand him in good stead – as will be seen later in the narrative dialogue.

In ET's case, this is a kind of knowledge that can only be understood through an ecological approach that situates him in the context of an active engagement with his local environment. Both his knowledge and action are grounded in an active, perceptual, perpetual and personal involvement with his local context. In this regard, Ingold and Kurttila (2000: 194) suggest that what makes such knowledge local is "because it inheres in the activity, of inhabiting the land that actually creates *place*".

"Drawing with the Sea Bamboo" – The Value of "Being There"

"Being there" (Hannerz, 2003) has traditionally been considered as a tenet of the methodological strategy of the anthropologist. However, it is increasingly being embraced beyond anthropology by researchers in other disciplines who work on issues related to climate change and the environment (see Roncoli et al. 2009). This includes designers. Besides highlighting the value of local experiences of climate change the encounter with ET also underlined the importance for design researchers to gain an embodied understanding of climate change. That is why it was essential for the dialogue with ET to take place on site, for example see what the contaminated water looked like and smell the air. In the following, one of the authors of this paper who engaged in the dialogue with ET wrote the following notes about her experience of the scene of the encounter:

"After the narrative dialogue I feel the weight of his experiences. Clearing my mind I walk down to the sea to awaken the sensorium. On the beach I start digging up the sea sand, embedding gritty bits under my nails as I unearth pastel-coloured shells. Moulding the sand into shapes, a spiral develops close to the water's edge. The ebb and flow erase some of the shapes and soften them. The beach is littered with kelp. I arrange a few sea bamboo trees into a pattern. Ecklonia Maxima. A befitting name for such imposing bodies of the sea. I drag the metres-long bamboo trees so I can design with them on a bigger dune canvass. Looking out over the sea, a brown canopy of kelp forest is swaying with the tide and environmental aesthetics come to mind.



Figure 7. Section of Ecklonia Maxima beach textile

I return form the beach tired but with my sensorium revitalised. Looking out over the coastal zone, the sea, rhenosterveld and nature with 'green eyes' I realise what difference it makes when the history of the area is known linked to the power of first-hand experience. I have been visiting The Farm for three decades now… Academic arguments around conservation and sustainable futures will remain just that – academic, theoretical – if we do not become part of that which we seek to conserve. As a part of and observing her natural cycles, I admire nature's integrity, honesty, respect, and patience."

Visual and sensory perceptions are key elements in understanding people's epistemology of climate (Strauss and Orlove, 2003). For people living in environments affected by climate change, the body's senses are important avenues through which they experience these changes in climate in their diverse manifestations such as the sight of contaminated water or the feeling of dried out earth underneath the feet.

In order to play a meaningful role in addressing issues of climate change designers also need to understand the way culture frames how people perceive and understand experience, (Hall, 2000) and ultimately respond to their environment. This framing is shaped by systems of meaning and relationships that mediate human engagements with nature. People perceive climate change through cultural lenses; people comprehend what they see based on their mental models and their social location; they give value to what they know in terms of shared meanings; the way they respond individually and collectively to climate change and environmental depletion is informed by these meanings and values (Mainsah, 2016).

From a cultural perspective, the various stakeholders in the narrative dialogue reacted in terms of the shared meaning of the interest group: potato farmers as a group rejected intercessions based on co-educating them around sustainability for more effective and economical ways of irrigation. It seems that this resistance was guided by the immediate profit motive. The tourist group rejected warnings and acted illegally in their shared meaning-making: leisure time is 'sacred' and the activities that sustain it such as beach driving is embedded in this cultural groups' conceptual framework (Hall, 2000) around leisure activities, and collateral damage to the fauna and flora does not necessarily fit this framework. Svabo and Ekelund (2015:72) state that "environmental aesthetics provide a conceptual framework for understanding the relationship between nature and culture". When role players in a particular scenario (such as ET in the Lambert's Bay narrative dialogue), perceive the environment from within and as participants, nature becomes quite different. It is transformed into a realm where we live as contributors and not as detached observers or consumers of nature.

Conclusion

The aim of the paper was to interrogate through narrative dialogue, how designerly strategies can translate existing knowledge about our stressed climate system into enhanced understanding and effective creative actions through embodied experiences located in the individual and communal emotional remit. The paper explored creative ways in which designers and educators can gain situated understandings of issues related to climate change by using two encounters with the farmer, The Environmental Terrorist, as an illustrative case. It focused on a narrative dialogue with the farmer in the form of a series of vignettes, and asks the question: how can individual responsibility situated in an emotional sphere of activity be deployed as a local change agent in environmental issues?

It became apparent that situated, embodied and immersed first-hand experiences of nature (and concomitant ecological crises) lead to a sustained relationship with nature and natural phenomena which in turn, engender care, and the need for stewardship.

Designerly approaches ought to speak to the co-design and development of ecological solutions that re-invent bonds between users and their tools or systems to affect pragmatic and long-lasting effects (Svabo & Ekelund, 2015:72). Ecological solutions that re-invent bonds between users and their tools or systems can be seen as solutions which speak to the strengthening of relationships between people, their livelihood and the natural environment. These "design ecology" solutions have the added benefit of contributing to the design of sustainable futures through "environmental aesthetics [which] provides a conceptual framework for understanding the relationship between nature and culture" (Svabo & Ekelund, 2015:72). Environmental aesthetics may well form part of a conceptual framework linking nature 'users' with nature in a more mindful and sustainable way, which in turn may serve to unite people with very different environmental views and world views. A mutual framework is necessary because if we do not share roughly the same conceptual framework, it is hard to make meaning together as a collective (Hall, 2000).

One of the most powerful findings of the research was that when role players in a particular scenario start perceiving the environment from within as participants, nature is transformed into a realm where we are able to live as contributors and not as detached observers or consumers of natural resources to the point of depletion. The Environmental Terrorist illustrated how embodied experiences, located in a creative and emotional sphere of activity, contribute to commanding environmental responses. This type of activism, emanating from a deep love of nature and the natural environment - needs to be balanced with a shared conceptual framework; a "design ecology" approach to finding solutions to contribute to the design of sustainable futures. Environmental aesthetics may well form part of a conceptual framework linking nature 'users' with nature in a more mindful and sustainable way, which in turn may serve to unite people with very different environmental views and world views.

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Designing Resilience for a Changing World

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ABSTRACT

In the context of our increasingly unstable environment and our awareness of a new breed of natural disasters on the foreseeable horizon, the anxiety resulting from our vulnerability within the changing world has been elevated. While design works towards adapting to our contemporary ecological challenges, alternative approaches that prioritise not only the principles of sustainability but the needs of our psychological and social condition must be considered. Such an approach requires an expanded application of the principles of emotionally durable design in an effort to effectively promote psychological well-being through our design provocations. This paper explores these ideas through a case study involving the development of speculative furniture that aims to mitigate the psychological impact of natural disasters with a specific focus on earthquakes. The direct experience of an earthquake can be traumatic and enduring, extending far beyond the period of the tremor. For those residing in a seismically active region, the threat of a pending event is an ever-constant source of anxiety. This research proposes a shift from physiological to psychological needs and an expanded understanding of the potential role of design in the face of natural disasters. Through the design and production of physically and digitally interactive, multi-material furniture forms, the artifacts developed in this project employ empathy, humor, creativity, and play in an aim to foster psychological resilience around seismic events. Ultimately, this project offers a timely precedent in support of sustainable design practice through the development of meaningful and durable design relationships.

Keywords

sustainability, furniture, speculative

INTRODUCTION

Capturing the current moment in design, what design historian Victor Margolin (1998) calls the "culture of sustainability" (p. 85) refers to efforts in the design industry that aim to acknowledge and rethink the environmental impact of design practice and products. To engage with this complex reality, designers are required to devise approaches to design practice that more effectively address design from social, cultural, and psychological perspectives. One such approach is "emotionally durable design" (Chapman, 2015), a design strategy that seeks to reduce the environmental impact of design by increasing the longevity of product lifespans through the encouragement of meaningful relationships between users, objects, and experiences. These approaches invite designers to look closely at people, not as easily categorisable users or consumers, but as complex social and psychological beings. This paper presents a case study entailing the development of speculative furniture designs that aim to mitigate the psychological impact of natural disasters through an application that builds upon the concepts of emotionally durable design in fostering resilience through the use of empathy, creativity, humour, and play.

Our contemporary environmental crisis is fraught with trepidation and anxiety for which design is uniquely prepared to allay. After all, design may be understood to play an instrumental part in this condition: "In many ways the environmental crisis is a design crisis" (Van Der Rohe & Cowan 2007, p.24). Aptly coined the long emergency by author James Howard Kunstler (2005), we find ourselves braced for the projected yet unpredictable impacts brought upon by the consequences of unsustainable industrial development or, more precisely, how we make, consume, and dispose of things. The changing forces of climate change, scarcity of resources, economic instability, and potential collapse of social systems loom in the future while massive impacts to our ecosystem are being negotiated in the present day. With these changes is the increasing threat of natural disasters. According to the United Nations International Strategy for Disaster Reduction (2013), as human society's population, assets, interconnectedness and activities increase over time, disasters resulting from the societal impact of Earth's natural systems are increasing in frequency and intensity. Globally, the ongoing increase in changing climate patterns and disaster effects is seen as a serious problem, so much so that insurance companies will no longer insure against extreme weather events (Davies, 2015; Van Der Ryn & Cowan, 2007). Disasters are often described as a result of the combination of the exposure to a hazard, the conditions of vulnerability presented by the hazard, and insufficient capacity or measures to reduce or cope with the resultant potential negative consequences.

Design, Sustainability, and Resilience

In the context of our increasingly unstable environment and our awareness of a new breed of natural disasters on the foreseeable horizon, the anxiety resulting from our vulnerability within the changing world has been elevated. While design works towards adapting to our contemporary ecological challenges, alternative approaches that prioritise not only the principles of sustainability but the needs of our psychological and social condition must be considered. By looking at the parameters through which relationships are built and sustained, Chapman (2015 15) advocates that design can address the root cause of ecological crisis, rather than merely treating its symptoms. Such an approach requires an expanded application of the principles of emotionally durable design in an effort to effectively promote psychological well-being through our design provocations.

While it is well established that objects exert a powerful presence in human experience (see for example, Csikszentmihalyi & Halton, 1981), excesses of production and consumption have meant that the majority of today's products lack intrinsic value and enduring memory as things. Accordingly, this raises the question of how we might imbue things with meaning that surpass mere practical utility (Walker, 32). As Chapman (2015) frames it, "waste is symptomatic of failed relationships" (p. 24) because, while a successful relationship involves growth and adaptability, at present, "material possessions remain hopelessly frozen in time. This incapacity for mutual evolution renders most products incapable of sustaining a durable relationship with users" (24).

"In order for human society to be sustainable on Earth we must become sufficiently resilient to future shocks." (Davies 2015)

These perspectives on the empathic and emotionally meaningful potential of design offer significant value for mitigating the harmful psychological effects of disasters. As a design approach it requires the cultivation of psychological resilience: between people and things, as well as between people and the environment. Resilience, by definition, is the capacity to recover quickly from difficulties; to bounce back from adversity (Oxford Dictionary Online, Retrieved August 28, 2016, from http://www.oxforddictionaries.com/definition/english /resilience). Although disasters may not be foreshadowed, resilience approaches acknowledge the existence of anticipated threat and prepare for the unexpected (Park et al, 2012). The concept of resilience has become connected to sustainability and, as the increasing prevalence of natural disasters is tied to environmental instability (Gow, 2009; Lee, 2016), the application of resilient thinking to disaster design specifically is both warranted and timely.

Case Study: Speculative Earthquake Furniture

The case study outlined in this paper demonstrates the application of such approach through the design of speculative furniture that aims to mitigate the negative psychological impact of earthquakes. Critical and speculative design are recent concepts and approaches applied in the design industry that aim to address wicked problems, such as design's role in environmental instability. In their book Design Noir: The Secret Life of Electronic Objects (2001), designers Anthony Dunne and Fiona Raby outline the practice of critical design, arguing that design too often unquestioningly reinforces the status quo of industrial and technological progress, and that its purpose is, uncritically, "still to provide new products – smaller, faster, different, better" (p. 58). They advocate using the medium of design to provide "a critique of the prevailing situation through designs that embody alternative social, cultural, technical or economic values" (p. 58).

Earthquakes and furniture have a long-standing relationship: when experiencing a seismic event we are instructed to "duck, cover, and hold" beneath a table in order to avoid injury from falling debris (NZMCD 2012). Within this context a common table undergoes an instantaneous transformation in becoming a shelter. While design in this instance may meet the needs of the physical implications endured in a seismic event, the direct experience of an earthquake can be traumatic and enduring, extending far beyond the period of the tremor as an ever-present source of anxiety. In the face of unpredictable natural disasters such as earthquakes, vulnerability is heightened by traumatic stressors that may affect an individual's expectations about the future, triggering cognitive and emotional reactions (Cherry 2009). Of the six basic emotions – happiness, sadness, fear, anger, disgust and surprise – "fear is a dominant emotional reaction no matter what people's behavioural response is to earthquake shaking" (Lindell et al, 2015). While earthquakes impose immediate physical threats, the psychological reactions induced by exposure to serious seismic events (such as fear and anxiety) often result in long-term suffering in the form of Post-Traumatic Stress Disorder (Werner, C. M., & Altman, I., 2000). According to a study by the National Center for PTSD (2000) up to 60% of the adult population of earthquake victims sampled suffer from PTSD. Furthermore, when an earthquake occurs, the victims have to live with the fear of potential recurrence, or aftershocks, as several earthquakes often occur in succession, and this ultimately translates to poor emotional well-being and strained relationships between people and the greater environment.

Chapman's Emotionally Durable Design (2015) outlines a practical framework that prioritises the need to build resilience into relationships between people and things as a counterpoint to our 'throwaway society' (p. 174-5). This "six-point experiential framework" provides useful criteria to evaluate the development of emotional longevity and perceived value in products through the application of narrative, detachment, surface, attachment, fiction, and/or consciousness. These "pathways" (p. 175) provide a way to materially, narratively, and psychologically imbue designed objects with layers of meaning to support durable and resilient relationships. In proposing a shift from physiological to psychological needs, the artifacts outlined in this case study reflect these criteria as well as empathy, humor, creativity, and play in an aim to foster psychological resilience around seismic events.

Case Study Overview

This case study consists three interrelated projects that define a body of creative research currently under development by a co-author of this paper: This includes the Seismic Cabinet, Earthquake First Aid Kit, and Earthquake Bench.

Seismic Cabinet

The Seismic Cabinet celebrates the enduring experience of earthquakes within the context of a material palette representative of a New Zealand housing vernacular. While seismic events expose people to feelings of anxiety and helplessness, the Seismic Cabinet aims to mitigate these negative emotional responses through playful interaction: as the user slides the cabinet door, an analogue “seismic arm” is triggered resulting in a process of perpetual mark-making. The act of mark-making pays homage to the memory of past earthquakes while also supporting an attitude of resilience towards future seismic events. Beyond the physical interaction with the cabinet, this piece elicits meaningful connection with the user through the considered application of material surfaces that support a visual and tactile narrative enriched by an evolving patina that celebrates age, wear, and interactivity. Accordingly, this emotionally durable approach fosters resilience and sustainability by offering a design solution that promotes an enduring relationship between the object, the user, and time itself

Earthquake First Aid Kit

Research shows that the consumption of alcohol increases following seismic events and other natural disasters (CERA 2014). The Earthquake First Aid Kit aims to raise awareness about the threat of substance abuse as it relates to earthquakes, as well as to foster psychological resilience in regards to the day-to-day stress and anxiety associated with the imminent threat of seismic events. The contents within the Earthquake First Aid Kit – a set of single-serve liquor bottles and accompanying shot glasses – are only accessible in the event of substantial seismic motion: upon being triggered by an earthquake, a sensor releases the door making it ajar and availing the contents safely secured within. According to the quality of surprise and the quirky nature of the interaction enabled by this object, the Earthquake First Aid Kit elicits a compelling relationship. This relationship relies on a conflicting desire on the part of the user who looks forward to witnessing the cabinet come to life, and the understanding that this anticipation requires the trigger of a significant seismic event. Ultimately this object fosters psychological resilience by effectively transforming the threat of disaster into a pleasurable, anticipatory experience.

Earthquake Bench

The aim of the Earthquake Bench is to acknowledge the prominence of seismic faults and events upon New Zealand’s collective national identity, and to challenge the negative associations residents have in response to earthquakes by eliciting a playful, interactive, user-controlled experience that celebrates seismic activity. Designed for public use, the bench measures approximately two metres in length enabling multiple users to engage with the bench at a single time. Formed from a monolithic laminated wood beam, the bench is shaped with a subtle curve where it meets the ground thus allowing for a rocking motion to be experienced. The top surface of the bench is milled with a tactile topographical map of New Zealand complete with major fault lines and markers signifying major seismic events that have occurred over history. This object elicits emotional attachment by providing users (in this instance, residents of New Zealand) with a meaningful and

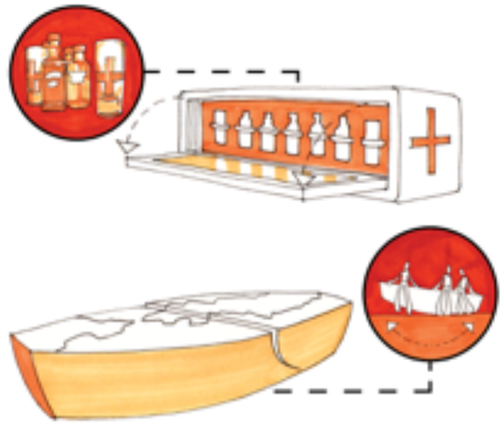


Figure 1. Earthquake First Aid Kit (Sweet, T. 2016) and Earthquake Bench (Sweet, T. & Sweet, K. 2017)

sensory-rich experience that is contextually relevant and personally identifiable. As a physically interactive artefact, the action generated by the playful exchange between user and object – an implied earthquake simulation – fosters a positive re-association with potentially threatening events, and through this promotes psychological resilience.

Conclusion

The anticipation of natural disaster, particularly for those living in high-risk regions, is part of everyday life. In this sense, these events become intertwined with the complexity of the everyday, including not just the highs and lows of human experience, but the objects that life is lived with and through. In the above discussion and case study we have sought to demonstrate how the complex experience of those living in the shadow of natural disaster, and ecological instability in general, can be augmented through design that fosters psychological resilience and emotionally durable relationships. The speculative furniture artefacts introduced utilise seismic activity to inscribe empathy, humour, creativity, and play into these events, and invite a shift from physiological to psychological needs in proposing an expanded understanding of the potential role of design in the face of natural disasters.

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Boundary objects transitioning beyond borders

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ABSTRACT

The research field which defines boundary objects has been theorised from the early works of Popper in the 1960's in the field of Science and Technology and more latter writings argue boundary objects to be mediating artefacts within the realm of sociology. This runs parallel to the study area of Design which also refers to these boundary objects as mediating artefacts as well. This classification of a boundary object is brought under question through this paper as it attempts to define boundary object within a transdisciplinary design projects. Within this perspective the transdisciplinary project underline the inter-departmental co-design and participation of students, educators, facilitators and community experts. As participants of this transdisciplinary design project, we analyze the project through qualitative methods of inquiry, which consists of researcher's observations, contextual photography and researcher's reflection methods. We illustrate the process of how this boundary object was created and then "destroyed". This process is what we argue as the transition from the ontological to the epistemic realm. Furthermore, we reveal the main prerogative of this paper as a description of how a boundary object within transposed learning environments can incubate deeper levels of learning about wicked problem areas in design - such as climate change and climate awareness. The final revelation of this paper discloses that an "embodiment" of these metaphors can result in a transition towards a "personified" artefact.

Keywords

boundary object, climate change, climate awareness

INTRODUCTION

The role of a boundary object will be described through analyzing classic and contemporary literature on 'what' defines a boundary object. An investigation will be conducted to describe how boundary objects have been applied in – specifically -design practice. The case study methodology will be used to answer the "How" research question that is defined in this paper. We aim to identify how a boundary object can help to create climate awareness. Through analyzing a single-case, we will be able to identify common themes in how a research project utilised boundary objects. The research project in discussion was conducted by a research partnership between CPUT and AHO on the C-SAN-Futures project and the project transposed a group of fourth year design students from Cape Town, South Africa, to Windhoek, Namibia, in order to generate climate awareness through a built artefact, called Fiscilla. Fiscilla's role as mediating artefact will be theorised throughout this paper as 'her' significance within design practice will be unpacked.

Identifying A Research Gap

Boundary objects have been theorised over the past six decades from the work of Popper, who introduced the term 'Boundary Objects' within the field of Scientific advancement and development (Popper 1963), to more latter work of Fox which describes Boundary Objects within the area of sociology through means of introducing new technologies into medicine and surgical practice (Fox 2011). The theorised timeline of Boundary Objects does indicate that within the professions in which Boundary Objects are utilised in, common themes are pushed to the foreground. For instance: Boundary Objects are originally described as a mechanism that allows collaborations to be facilitated within scientific communities (Star 1989). Thereafter, it becomes a well theorised research topic within the area of collaborations and transpositions within organisational practice from the early 1900's (Brown & Duguid 1991) to the late 1900's (Guston 1999). The potential and inherit benefits of using a Boundary Objects is further theorised in Software Engineering, within the research themes of human engagement with new technologies (Walenstein 2003). 'Design' was tied with Boundary Objects when product development of Software Engineering was theorised by John et al and Miller in the mid 2000's (John et al. 2004; Miller 2005). A fresh perspective of Boundary Objects in organisational practice is explored by Dirknick where the focus shifts to inter-departmental collaborations within Educational Institutes (Dirkinck-Holmfeld 2006).

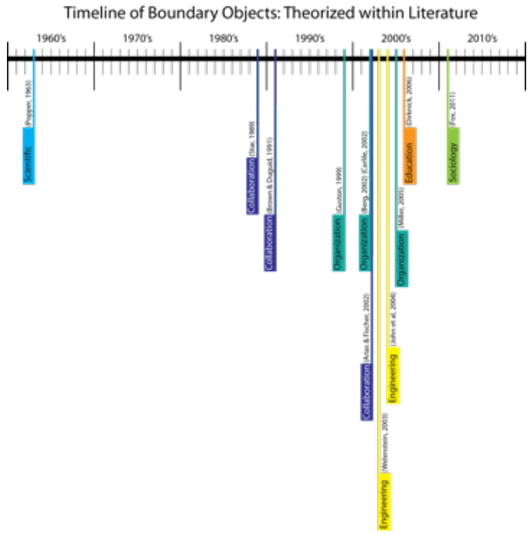


Figure 1. Timeline of Boundary Objects

Most of the literature does introduce and describe a variety of Boundary Objects (Fox 2011). Retrospectively, boundary objects are described to create understanding though representations, abstractions and metaphors (Arias & Fischer 2000). Boundary objects have the potential to bring people together to discuss and share meanings. In some cases, boundary objects become metaphors of an idea and further develop understanding (Fox 2011). Conversely, the roles of boundary objects are not defined when dealing with wicked problems, such as climate awareness; even though boundary objects have the potential to generate understanding towards these wicked problems through design practice (Fox 2011). Boundary objects have been well introduced and defined, however, little is theorised on how boundary objects have been applied (Arias & Fischer 2000). Even fewer literature 'speaks' about the application and functionality of Boundary Objects within design practice – to be more specific. This introduces the potential of a theoretical gap in how boundary objects have been used within design education. This theoretical gap deserves further investigation.

Research Questions

Therefore, this paper aims at introducing theoretical contributions to this identified gap in the evolutionary timeline of Boundary Objects. This paper will do this by addressing the following main question: How can we foster understanding towards climate awareness through the inclusion of a boundary object in a design project?

Aims

This paper aims at explaining the role of a boundary object within a design project and how it fosters understanding towards climate awareness. Through describing the way the boundary object was utilised we believe we can find the value boundary objects contributes to research/design projects. This paper draws on case study methodology which includes qualitative methods and techniques.

The case study method draws together ones from qualitative inquiry. These include Contextual Photography, Researcher's Reflections and Researcher's Observations. Through our descriptions, we aim to identify how boundary objects can be by conjecture, valuable to the learning experience on wicked problems, such as Climate Change. Furthermore, we aim to contribute to the theorised understanding and flexibility of a boundary object.

Methods

The research problem prompts a "How" research question to be asked. The "How" question creates a qualitative mode of enquiry which is best tied with a single-case explanatory case study method (Yin 2013). This case study question is investigating the role of a boundary object, which in this case, is a built artefact which was created by a group of inter-disciplinary design students, from the Cape Peninsula University of Technology, with the purpose of generating understanding towards climate awareness. This "How" question is important for the study of the contemporary phenomenon within this real-life context (Baxter & Jack 2008; Yin 2013). Yin (Yin 2003) explains how the case study methodology allows the researcher to take the role of an observer to conduct direct observations with the ability "to deal with a full variety of evidence" which ranges from artefacts to observations. For the purpose to answer the research question, this paper illuminates the steps that was taken to create a boundary object, how it was implemented and what results came from the utilisation of a boundary object (Schramm 1971). However, it is not necessary for this paper to have a complete and accurate rendition of the actual events that took place on the project (Yin 2013), as the case study methodology allows for the discussion around common themes within the case to be sufficient (Baxter & Jack 2008).

The explanatory case study methodology allows for the following proposition to be made: This proposition is that boundary objects create conditions that are conducive to shared understanding towards climate awareness. This draws on the theoretical issues that revealed collaborations and transposition within inter-departmental organisations (Miller 2005). The primary unit of analysis, for this purpose, is the interactions which were created through the utilisation of the boundary object. Firstly, these interactions will provide information on how students from different design courses collaborated to create the boundary object; secondly, how the boundary object created collaborations between the university and local communities; and finally, the interactions that concluded to the epistemic transition of the built artefact. After explaining these interactions, the logical linking of data to the proposition will happen through discussing theoretical themes (Yin 2013). These themes will be interpreted through the contributions of prior literature on boundary objects. Ultimately, the findings from these discussions will contribute to the evolutionary theory on boundary objects within collaborative and organisational - especially in design - practice.



Figure 2. Case Study: Boundary Object beyond Borders

A series of post project reflections have resulted in the following case to be explored: Fiscilla (the name we gave the boundary object for a project, which aim was to generate climate awareness). Fiscilla was birthed from a design process which was facilitated by an inter-disciplinary group of design students from the Cape Peninsula University of Technology (CPUT). In order for Fiscilla to embody the 'message' of climate awareness, these students had to incorporate the four elements (fire, water, air and earth) into the design of the artefact. Students were tasked to design the artefact with ultimate deconstruction in mind. The artefact had to travel from Cape Town, South Africa, to Windhoek, Namibia to be presented at the 14th annual Participatory Design Conference. The PDC conference provided a space where student work could be displayed and interacted with. Ultimately the work had to comprise of a participatory design process. The exposure for learners to these transposed learning environments literally took the classroom 'out there' as the group of students engaged with fishing and desert communities in order to collect and engage with the local stories about climate awareness (Odora-Hoppers 2002).

Student Collaborations



Figure 3. Student collaboration

The student group consisted of an interdisciplinary assembly of Bachelor's Degree students from Graphic -, Surface and Industrial Design, which collaborated to create Fiscilla. Each discipline enriched the built artefact with their advantageous design-strategies. The interactions ranged from the joining of the frames, to the cutting and stretching of fabric to the painted detail on the artefact. Tensions rose as group dynamics flared into heated debates during the build of Fiscilla, especially when it was nearing completion. Midst the productivity through chaos, students managed to incorporate strong metaphors into the artefact which represented various effects of climate change on the lived environment. These metaphors were referred to when the artefact was placed on 'display' within the two community workshops on route to Namibia (Hung 2002). These references allowed the artefact to act as a mediator to sensitise the communities to the complex debates around climate awareness (Wegner 1998).

Community Engagement



Figure 4. Community Engagement

Fiscilla also allowed for a smooth transposition from the university to local communities, as 'she' found reference into the two fishing-communities that was visited. Fiscilla had the built-form of the Tiger fish which is an endangered fish species in the Orange River (which creates the geographical border between South Africa and Namibia). The function and purpose of Fiscilla was to create awareness on over fishing, as well as the threatening conditions of the Orange River's riverbanks which is narrowing due to water-dependent agriculture in the region, as well as warmer climate.

Once the metaphor and embodiment of Fiscilla was shared with the two communities, the dialog exchange of knowledge from seasoned fisherman could be facilitated with the students who transcribed the 'stories' from the fisherman onto the form of the artefact. Fiscilla evolved from a built form, to a mediating artefact (Dirkinck-Holmfeld 2006; Hung 2002) and it embodied the interactions of students and local experts. The interactions between students, university and local experts exemplifies the 'social relations' that has been transposed towards a more psychological realm (Vygotsky 1981) in order to understand a thematic topic like climate awareness. This is what Vygotsky explains through defining mediating artefacts such as Fiscilla.

Evolution From Ontological to Epistemic



Figure 5. Evolution from Ontological to Epistemic

Moving through and beyond the boundaries of social relation towards the psychological realm is further mirrored by the transition from the tangible ontology of Fiscilla, to the epistemic realm. This transition was put into place after she 'acted' her part in the 14th PDC conference. The boundary object was reconstructed by a new student group that joined in the second year of the project's existence. The reconstruction was to remove any toxic materials from the original design as the reconstructed boundary object would be burnt at an instillation ceremony at the cultural event called Afrika Burn, in the Tankwa Karoo South Africa. Her evolution from raw materials, to form, purpose and – ultimately – to significance, is what acted as catalyst for her 'death'. This death was the destruction of the boundary object in front of thousands of spectators as an attempt to create a final tribute to climate awareness. Her journey went from river (water), to desert (earth), and from fire to air. The initial purpose of Fiscilla was to embody these four elements within her quest to generate climate awareness through various interactions along her journey (Arias & Fischer 2000). Surprisingly, Fiscilla did more than just embody these metaphors, she became a 'personified artefact' (why else would 'she' be described through 'her' role as a mediating artefact?). The final tribute of the boundary object being burnt, births a new era of the artefact as Fiscilla now becomes a means to an end. Two years after she was created, she is still creating discussions around climate awareness through her flexible presence in the epistemic realm (Bechky 2003).

Contributions of a Boundary Object: Research Themes

Research Themes and Literature

Through this single-case analysis, the proposition that a boundary objects create conditions that are conducive to communal understanding towards climate awareness can be linked the themes that are submersed in the interactions with Fiscilla. These interactions draw on various theoretical issues. Contained within the design practices, the boundary object did facilitate interdepartmental cohesion between various student groups and design disciplines (Miller 2005). The interactions with the boundary object did assist the design process as students conceptualised the boundary object, created form from raw materials, and enhanced the purpose of the artefact by linking it with climatic metaphors which increased the value and significance of the boundary object (Fox 2011; John et al. 2004). Furthermore, the boundary object acted as a mediator within transposed learning and workshop environments with local communities (Wegner 1998). This mediating role is strengthened by the multi metaphorical embodiment of climate awareness. The interactions within the communities also facilitated participatory design to be enhanced through collaborations on the artefact. Finally, the embodiment of metaphors allowed the mediating artefact to evolve into a personified artefact through psychological engagements which was enhanced through the epistemic transition of Fiscilla (Vygotsky 1981). This transition of a boundary object to move beyond physical and geographical borders creates a sense of freedom and flexibility (Hung 2002) in the way boundary objects can be utilised with design practice.

Discussion and Conclusion

This paper has identified and described how a boundary object can transpose between geographical, physical and psychological boundaries. Within this perspective a single case study underlined the interactions which illuminated inter-disciplinary cohesion between student groups, fostered participatory design between university, students and local communities and flexibility of a boundary object to move from a tangible to epistemic realm. In order to have determined these cohesions, the case study underpinned the interactions of two student groups who have built, presented, reconstructed and burnt the boundary object. The boundary object was used to create climate awareness within student groups, local fishing communities, international conference platforms and social events. It is through the narrative within these settings that we are continuously shaping questions around the limitations of boundary objects and to what extent it can contribute towards climate awareness. Navigated by these questions, this paper builds upon existing literature framed around boundary objects and introduces how boundary objects could be used in complex design projects.

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Up_citying. Four ecologies for an open design environment approach

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ABSTRACT

The last 15 years have witnessed an important participative dimension of the bottom-up multidisciplinary content socially generated in the urban environment. This is due to the increasingly connected communication, which triggered the awareness on the relation between demographic and structural density, and the resource scarcity. Considering this we introduce a fourfold view lens that captures the changing openness of the urban environment, proposing the Up_Citying conceptual tool.

The main questions we aim to address are:

- how to engage citizens and designers in a long term connection with the city and its active citizenship movements
- how to activate all the phases of the design process (from analysis to implementation and evolution of the results) in the cultural, digital and physical context of the city.

The paper reports preliminary findings from 2 pedagogical Design School experiences (The Hong Kong Polytechnic University & The Domus Academy of Milano) from 4 perspectives:

- the **Space Ecology**: framing built cities together with temporary, not-yet-legal, rethought or wished cities, which generate physical places, structures and voids;
- the **Identity Ecology**: referring to the individuals, groups and communities, their culture, habits, fears and challenges in engaging and shaping the city and their collaborative behavior;
- the **Policy Ecology**: planning the stakeholder networks and partnerships, facing the need to design strategic relations and interactions, enabling a meaningful dialog and alliances;
- the **Program Ecology**: introducing the planning of interventions, activities and events, combining bottom-up and top-down strategies, that attract and involves the active citizenship designing new liveability.

Keywords

urban-generated-content, active-design, learning-environment

INTRODUCTION

The development of the urban environment has been extensively studied in the last two decades, generating important discussions on the challenges raised by its unprecedented growth. This accelerated rate of urbanisation, sets up a confrontation between the economic development agenda of the city governments, and the quality of life of the citizens living in the city setting up sustainable development concerns (Godshalk, 2004).

In particular Godshalk outlines the importance of social sustainability in aligning “resources”, “development” and “property” attributes of sustainable development in urban planning, proposed earlier by Campbell (1996). The author introduces the frictions emerging in negotiating the above-mentioned elements, introducing the notion of “liveability”.

Liveability in the public spaces in the city is also one of the main concerns of Jan Gehl’s theoretical research and urban design projects (Gehl, 2011) (Gehl and Svarre, 2013). Attempting to reconcile the different facets of social sustainability, Vallance organises the previous theoretical insights coming from urban planning and social science in three categories: “development social sustainability” concerned with the basic needs, social capital, justice, equity and ethical values, “bridge sustainability” concerning changes in behavior aiming to achieve environmental goals, and “maintenance sustainability” referring to the preservation and resilience in face of change, and the way in which citizens react (embrace or resist those changes) (Vallance et al., 2011). The later category of social sustainability has also been given increased attention in the design for social innovation literature and projects, and in the study of resilient communities by Ezio Manzini (2015).

The next paper draws from the insights on social sustainability and social innovation aiming to pinpoint the necessity to increase the active participation of the (young) generation in the creation of a sustainable urban environment. In this sense we present the city as an open system that allows influences, alterations and change in its built Space and Identity, therefore triggering Policy redefinition and long-term strategic Programs.

1. The 4 Ecologies to engage designers in a participatory approach.

The Space, Identity, Policy and Program ecologies presented herein, and plan for social sustainability in an urban environment, supporting policies with long term strategies. To achieve this goal, Up_Citying relies on the expertise of a multidisciplinary team of urban designers, psychologists, policy makers and urban communication experts. The pedagogical experiments aimed to: 1) study specific local solutions; 2) establish an international network in urban environmental design.

1.1 Using participatory design methods to engage in the discovery of open learning environments

Although precedent global scale initiatives have been successful in implementing social sustainability interventions, the gap between the research conducted by designers in academic environment still needs to be aligned with the fast speed of change in the urban environment. In both courses presented, a particular attention was given to the participated observation using ethnography methods. This facilitated the urban design and architecture students to inquire the social Identity of the designated site, connecting it to the specificity of the built Space. The multidisciplinary team of experts, guided students to gradually advance from the behavior of individual stakeholders in their local environment to design an extended view of networked communities at global scale. By conducting interviews, hide observations, and mapping the site, as well as tracking the circulation flows in the designated interior and exterior public spaces, students were able to grasp the relation between the 2 ecologies - Identity and Space - and envision the possibilities to generate Policy and Program ecologies accordingly.

1.2 Who are the designers? Design students from city dwellers to creative citizens

This thorough, qualitative investigation of the urban environment in a bottom-up approach helped students come closer to the real issues at the intersection of Space and Identity ecologies, encouraging them to adopt the creative citizenship perspective that brings together technology, talent and tolerance (R.Florida, 2005), from the initial field work phase of the projects. Moreover the involvement of the city government in the pedagogical activities empowered students and facilitators to understand the resonance of their design decisions in Policy terms, framing their solutions into longer scale Programs. From this perspective the innovative contribution of Up_Citying stays precisely in integrating the different disciplinary languages and approaches, specific to the ecologies in a coherent pedagogical content. This type of integration empowered students to temporary adopt the role of creative citizens, understand the changing needs of the respective communities, and plan their projects accordingly, rather than apply their expertise neutrally, as external consultants.

1.3 Capturing the change by using a four-folded lens in two cultural contexts: Italy and China

Some of the main factors that linked the two cultural contexts were related to the geographical location, cultural heritage and governance. Location wise both sites constitute “hinge” areas that have the potential to become strategic social and cultural sustainability knots, for the neighboring urban environments. FoTan district (north Hong Kong), became in the later years home of an increasingly growing creative class that started re-interpreting its identity. Similarly the Milanese area of the Scalo di Porta Romana is presently the focal point of interest for urban designers and policy makers. The experiments also helped designers and citizens frame the changes in a sustainable perspective, considering the basic needs of the communities, enabling new creative behaviors and preserving and re-interpreting the meaning of changes (Vallance et al., 2011).

2. Preliminary findings: working with the 4 Ecologies in Hong Kong and Milano

Although the structure of the pedagogical experiences in Hong Kong and Milano was different, (in the first case gathering a group of 12 graduate students in 16 working sessions, in the second guiding the master thesis of 2 graduate students) Up_Citying approach provided a shared vision of how the 4 Ecologies generated parallel design processes and enabling a social sustainability perspective.

2.1 Hong Kong – finding the meaning of the open environment in FoTan creative district

In order to better understand the issues and opportunities in the FoTan area, the students, organised in 4 groups, were asked to conduct an initial field research about the local 4 Ecologies: Space, Identity, Policy and Program; this initial stage was then followed by the analysis of the findings in shared sessions, facilitated by the teachers and experts. The initial findings from the field trips generated 3 concepts.

SECTION investigated the opportunities found in the Space and Identity analysis of the east-west section of the area; by connecting a converted institutional building with the public area hosting art galleries and a vibrant street life through a bridge, the project aimed to create new circulation flows and an increased liveability.

SPINE evolved on the northwest-southeast axis, creating a corridor that welcomes hybrid commercial, leisure and creative activities and spaces.

SQUARE marks the intersection of the two axes expanding the opportunities individuated by the other two concepts through a Program Ecology that also opens the possibilities for Policy generation (Fig.1).

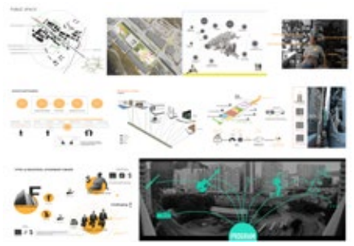


Figure1. PolyU Up_Citying concepts: FoTan district, Hong Kong SAR, China.

2.2 Milan – re-interpreting the identity of space in the Scalo di Porta Romana area

Scalo di porta Romana is a large un-used space placed in the urban context of the intersection between two important city axis: the ancient roman road that still links between south and north Italy, and the city belt enclosing the 7 railway stations which used to regulate the train traffic in the 19th century industrial capital. The future closure of the old railway system offers nowadays important regeneration opportunities to the after-Expo city of Milan, enabling new ways to activate focal urban knots.

The master thesis of the two students at the Domus Academy used the Up_Citying lens and design model to identify the cultural vocation of the Scalo di Porta Romana area and identify it an increasing attractor for public and private cultural institutions. The analysis of some of the local istitutions like Fondazione Prada, fashion research centers, co-working hubs and Bocconi University student residences, shaped the main idea of the MILLENIAL’S PARK project. The Up_Citying, 4 Ecologies approach made possible the following conclusions of the thesis:

SPACE: the park allows a linear formal structure generating parallel functions such as an elevated bicycle path, a navigating channel connected to Darsena area, a light transport circle line, an art exhibition park and the placement of youth activities areas.

IDENTITY: the ethnographic research have identified the presence of a young population with new needs, alternative ways of working, fast and light mobility, temporary residency, night and day leisure and recreational activities, permanently connected and aspiring at new forms of collective sociability.

POLICY: related to all successful experiences of the 5 years of preparation for the Expo 2015 (which generated new and fertile relationships and alliances between the local government and different institutions, enterprises and active citizens) students designed an accurate stakeholder map and studied how the cross-fertilisation of ideas and initiatives among the urban stakeholders could generate an economic and constructive engine in the area.

PROGRAM: an initial plan was envisioned in order to activate the social dynamics. The activities were planned on a 3 years span and took into account the seasonal particularities of each months, weeks and days, as a way to make the MILLENIAL’S PARK a pulsing and attractive urban node at national and international levels (Fig.2).

2.3 Design Program Platforms that focus on “Make things happen”

The concepts presented served mainly to test the relevance and validity of the Up_Citying as a tool that bridges the gap between the ongoing development of the city environment and the more idealistic and detached view cultivated in the academic environment. The projects helped to unveil the creative nuggets fostered in the city, and address social sustainability issues such as generational, cultural and institutional gaps that affect the sociability in the urban environments. In this sense Up_Citying helped students deepen their analysis of the cities, translating the creative waves resonating from the city into a systematic approach to create comprehensive Program platforms. By this we intend the parallel development process of the Space and Identity ecology in real settings through Program of temporary and permanent interventions, and the resonance and amplification of this ecology in virtual environment. More than a static tool the virtual platform can become a meeting place that reflects the bottom-up desires of the citizenship intersecting them with top-down decision making processes in a Policy ecology.

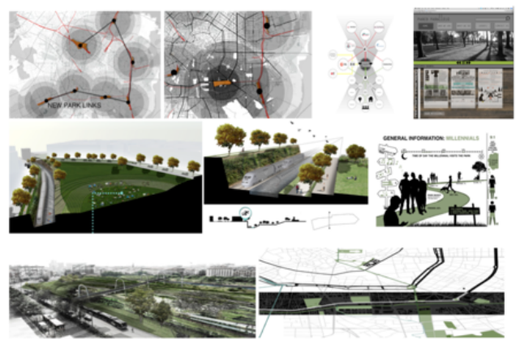


Figure 2. Domus Academy Up_Citying concepts: Scalo di Porta Romana, Milan, Italy.

Conclusion

The multifaceted lens provided by Up_Citying is in its initial phases of development, it proved relevant as a working tool in two “hinge” urban contexts that bare the imprint of ongoing change. Due to the complexity of the fast growth in the urban environment, sustainability issues have to be approached in all its dimensions; in the present paper we concentrated on how the Up_Citying lens helped support a more informed and empathic connection between the professional designers’ community, all active citizens communities and the city governance. We presented the initial investigation on the social sustainability of two areas, that have in common a strategic potential, “energy and unpredictable multiple forces”, that as William Lim noted, “are necessary for creativity to thrive” in the urban environment (2014, p.162).

In this process, Up_Citying proved to act as a mediating tool to which multidisciplinary experts can relate from different perspectives as facilitators. By placing urban design students in front the real challenge of envisioning a translation of their design solution in policy and long-term programs, the courses generated a territory of negotiation between the “project culture” cultivated in academia and the “make things happen” culture, specific to city governance.

For this reason we suggest that future work can further inquire the relevance of Up_Citying lens in three instances: a). following-up the implementations of social sustainable Policies and Programs informed by the students’ projects; b). understanding the possibilities of 4 Up_Citying Ecologies to generate boundary objects (Star & Griesemer, 1999) between the multidisciplinary communities of practice (Sapsed & Salter, 2004) involved: urban designers (Space), social psychologists (Identity), city government (Policy), service designers (Program); c). strengthening the connections between public institutions and academia by proposing Up-Citying as a meaning negotiation territory.

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Designerly ways of exploring climate change: participatory design methods and the storied artefact

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ABSTRACT

Issues surrounding climate change and the environment have become major concerns across the world. These concerns have necessitated a call for collective efforts globally to address climate change and its impact on daily lives. In this paper, we explore the use of a "storied artefact" as a discursive prototype to communicate issues of climate change with students, professionals and community members in the African context. The process was facilitated by educators from various design disciplines. We reflect on the design activities in this study, based on our involvement in the process as participant observers. The early phases of the research were conducted at a University of Technology (UoT) in South Africa which focused on ideation of the artefact. The final phases focused on the journey from Cape Town to Namibia, and completing the artefact at a conference where it was shown as an installation. Using design research methods such as co-design, storytelling, role-playing, illustrations, video and audio recording, students and educators collectively brought their efforts to design the artefact which took the form of a fish. As her persona developed, Fiscilla the fish became a powerful embodiment of abstractions made concrete by students who animated impressions around climate change to illustrate ultimately what they have learned in the process of designing and making her. The artefact challenged notions around climate change and the environment, and sensitisation of participants and viewers occurred through prolonged interaction with the stories that accompanied the design and journey of the fish.

Keywords

climate change, participatory design, storied artefact

INTRODUCTION

Climate Change (CC) is a critical global issue and an unattractive environmental reality. The impact of the harsh climatic concerns on the environment have necessitated a call for collective efforts globally to address CC and its grim impact on our livelihoods (Dokos et al., 2008:11-12; Mishra et al., 2015:110-112). CC continuously becomes one of the complex issues that international communities have to deal with presently, and in the near future. The long term future, particularly in African communities, needs to be speculated to address the portentous matters associated with CC and environmental sustainability (Connolly-Boutin & Smit, 2015: 385-386).

Futures studies through design thinking with collaborative efforts from the general public could be explored to find solutions to CC. Futures studies is situated within speculative design or design fiction (Sanders & Stappers, 2014:12-13). Futures studies have become a creative arena for stakeholders and designers functioning as creative allies to foresee or speculate climate futures through designerly strategies. These days designers continually explore solutions to the persistent CC challenges by designing tangible solutions in the form of designed artefacts or systems. Their creativity could promote spin-offs of concepts "promoting services or product services systems innovations" (Franqueira, 2007:10-11) to directly address the challenges with climate futures. Some of these interventions are propagated through educational messages aimed at sensitising the public about environmental sustainability. In such instances, sustainable considerations are integrated into the designed artefact or system. The essence of such designerly strategies is to reduce harmful effects that a product or service might pose to users and the environment.

In this paper, we explore the use of a "storied" artefact as an alternative approach for design students and community members to communicate the ominous issues of CC within their localities in Africa. Thus the questions underlining this investigation are: how can design be explored to address CC issues and as mentioned in the Open Design for Environment track, what skills must designers develop to embrace and harness design towards sustainability? (Cumulus, 2016:para 3). Further we ask ourselves to what extent can design educators practically animate these questions through designerly ways of knowing? In response to these questions, we describe Participatory Design (PD) approaches that we have explored with students and community members which resulted in a mediating artefact to generate discussions around CC and environmental sustainability.

Background and Purpose

Environmental sustainability and CC has been established as a global issue which is unevenly distributed in kind and time. At the initial stages it creates both losers and beneficiaries. If the situation is not controlled it will escalade (see Figure 1) and its impact on global economies will be experienced over time (Edeholt & Mainsah, 2014:76). In many developing economies across the world and particularly regions in Africa, have been experiencing the impact of CC. Most African countries are already struggling with social, environmental and economic issues (Connolly-Boutin & Smit, 2015:385-386). It is forecasted that developing communities will suffer the most from the incidence of extreme weather conditions which will increase drought and flooding (Iltus, 2015:3). The occurrence of CC and its concomitant realities threaten the holistic achievement of the Sustainable Development Goals (SDGs) by 2030 if there are no efforts for behaviourial change by society. CC has an economic impact which affects business globally. The cost of CC in both developed and developing economies cannot be equated to the amount of revenues generated worldwide. Primary resources in the environment can be considered as a natural capital. If businesses have to pay for the cost of CC and its impact on environment and health overtime (Figure 1), they will have to relinquish their profits (Makower, 2015:1-2). As CC impacts on the sustainment of agriculture which in turn affects food security, health and wellbeing for all persons (Pisano et al., 2015:5). Minimising the grim realities of CC can positively impact on economies globally.

In addressing this challenge, environmental sustainability requires education on climate futures to reduce its accompanied perils. This can be explored through effective communication – education targeted at behavioural change. Over the last two decades there have been many public campaigns to communicate issues of CC. However, very little is seen about behavioural change in response to CC (Van der Linden, 2014:1). Human behaviour in response to climate futures could therefore be actioned through the communication of messages that make sense to people within their socio- cultural settings. The communication of CC information is often explored through these three types of models: cognitive-analytical (knowledge-attitude-behaviour model); affective-experiential (fear and guilt messaging) and social-normative (normative paradigm, which explores social norms and values to persuade). Although these models are useful in communicating climate messages, the framing of these messages determines behavioural change (Van der Linden, 2014:2). Knowing that CC is such a complex global "wicked problem", it is frequently difficult to communicate appropriate messages to the public at large (Moser & Dilling, 2004:34).

Most of these public campaigns fail to make the context of CC messages explicit (Van der Linden, 2014:4). Sometimes the messages are propagated by scientists in language which is largely esoteric. Ordinary people tend to struggle with meaning making of CC information. Consequently, they find their own way to make sense out of these messages, which could have been misunderstood (Moser & Dilling, 2004:35), leaving them to act otherwise. This phenomenon continues to deepen the gap between the general public response to climate and the changing of their behaviour to environmental issues. Thus, an integrated approach in communicating climate futures through designed artefacts needs to be explored.

Artefacts serve as drivers in design. As part of the design processes, sketches, prototypes, mock-ups and so on shape the artefacts being designed. Artefacts facilitate interdisciplinary collaboration and give a concrete form to highly complex ideas. When these artefacts are put in different contexts and their modes of engagement are changed, it permits creative engagement with multiple dimensions (Agger, 2006:1). Design artefacts come in a variety of forms, such as personas and discursive prototypes which increase people centered conversations (Blomkvist & Segelström, 2013:12). These artefacts are sometimes fictional characters created to empathise and identify user needs within a particular design scenario (Trischler & Zehrer, 2012:61). As such introducing narratives in the form of prototypes or personas will certainly make people ask questions about CC. Explanation of CC messages can then be made through available mediating artefacts within a given context.

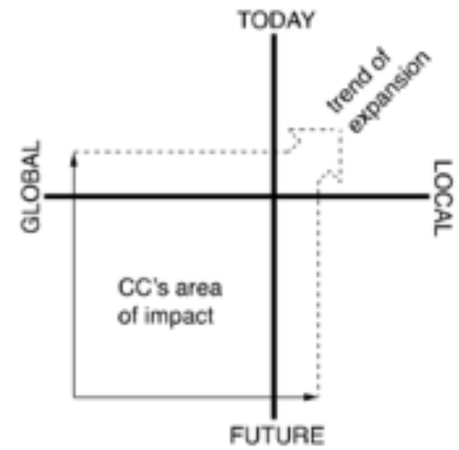


Figure 1. Illustrating climate futures overtime (Edeholt & Mainsah, 2014:77)

Designed Artefacts and Climate Futures

Human perceptions about CC appear to be scientific. Evidence suggests that CC have manifested and will continue to manifest itself in various ways such as rising temperatures, desertification, flooding and extreme weather events (Iltus, 2015:3). In CC language, one comes across terms such as the ozone layer, its depletion, greenhouse gases and so on. In reality, these concepts tend to be abstractions to the lay public. Thus simplifying climate messages is very critical as communication plays a key role in sensitising the public towards reducing the negative impacts of CC in very simple ways. However, owing to the lack of direct experiences of CC in many cultures, it requires the signalling, illustrating and explaining of CC matters by experts to the general public in ways that they can comprehend (Moser & Dilling, 2011:163). Designers have the ability to communicate CC scientific concepts with the tools at their disposal.

Design evolves within the social sphere where complex activities take place. Climate issues come with complexities and design serves as a common ground to explore solutions. The capabilities that designers possess, which enable them to foresee new concepts and identify signals of emerging ideas and behaviours, make them well positioned to assist society to explore new ways of living (Franqueira, 2007:10). Local communities may well require the assistance of designers to explore solutions to climate futures in the long term. In this respect, the use of designed artefacts could serve as boundary objects with which to communicate issues of climate matters through a designerly way of knowing (Cross,1982:223). Using design as a leveraging tool to inform the process will in turn reduce the complexities of some of these abstract ideas on CC to the lay public. Boundary objects serve as an important aid in collective meaning-making (Black, 2013:70). It can be in the form of designed artefact, serving as a medium for actors from different cultures to communicate (Blomkvist et al., 2015:1877).The artefact can facilitate a shared understanding on CC and call for a co-participatory action on climate futures where community members become a part of the entire project (Franqueira, 2007:2). Hence, designing contextualised visually-based tools with the public can generate discussions that could trigger human response to CC issues and influence behavioural change.

Design Environment– Emerging Prototypes

Design as a discipline offers creative avenues through which ideas can be explored about the human-made world of artefacts. Designers are good at proposing changes or make additions to this artificial world (Cross, 2001:5). Design is an evolving process and there are no limitations to what could be achieved when there is a cross-pollination of ideas between multidisciplinary designers and the lay public who are working collaboratively within an eco-design system to harvest solutions on climate futures (Chisin et al., 2014:183-185).

We as design educators explored the communication of climate futures through generative experiences with multidisciplinary students, professionals and other community members. Through this process, "transpiration" occurred between participating members which resulted in "shoot-ups" of growing ideas on CC (Chisin et al., 2014:183-185). Participating members directly engaged with CC and environmental sustainability concepts. Collectively, we explored the design of a discursive prototype in the form of a three-dimensional "Fish" artefact to discuss CC matters. Hence, the purpose of this paper was to investigate the design of a "storied" (Leggo, 2010:47) artefact with students and community members through a PD process. This was part of our collaborative "action" as design educators to respond to CC matters in the African context.

Design Action – the Storied Artefact

Design processes involve the creation of something based on a plan. The root word of design can be understood in two parts, which is "designo" meaning to draw and "signum" referring to a sign or something it stands for. Design processes contribute to visions, specifications and technical results which are the outcomes based on the actions of designers (Bratteteig, 2007:3).

The actions of designers are solution driven which could be used to tackle ill-defined problems, such as CC. As design educators our "design action" on CC was characterised by visualisations of future scenarios on the environment. They were integrated into the design and development of the discursive prototype.

The discursive prototype in our context is a visual object with multilayered characteristics. It is multi-modal, analytic and a reflective designed artefact (Agger, 2006:1).The prototype is multi-linguistic, addresses social and cultural issues. It serves as a metaphor to discuss climate futures, cuts across cultural and spatial differences. The discursive prototype in our case was in the form of a "storied" artefact. The artefact was designed with global world views on environmental sustainability in mind. The result of this design action functioned as a mediating artefact to tell stories about CC futures. We harvested ideas collaboratively from students, educators and community members to design the artefact (Chisin et al., 2014:185). The design action on CC was characterised by an integrated learning approach. In this context, we reflect upon concepts such as storied artefact and backcasting through designerly ways of knowing with students, educators and community members to inform the design of the discursive prototype (see Figure 1).

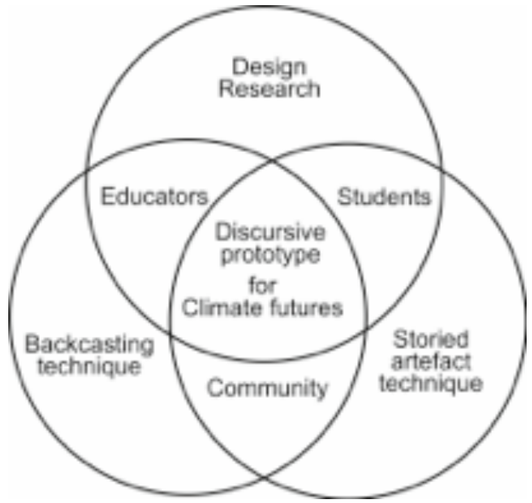


Figure 2. Thematic areas in designing the discursive prototype

Developing the Discursive Prototype – Evolving Strategies

The design of the prototype was based on three thematic areas as shown in Figure 2. These concepts helped in contextualising the investigation within climate futures and informed the design of the mediating artefact. We reflected upon and combined these concepts in design research, storied artefact, backcasting and this shaped our perspectives on designing the discursive prototype with participants (Figure 2). A brief overview of some of the concepts that informed the interactions with participants and designing of the artefact are described as follows:-

1) **Backcasting:** revolves around these three themes – "the formulation of a demanding target which cannot be reached without major societal changes; the development of one or more images of the future in which this target has been met; and an analysis of these images in relation to other societal goals and/ or in relation to the present state" (Ilstedt & Wangel, 2014:4). These strategies were delicately explored during the design of the artefact. We employed the best practices from the "past" (backcasting); what is happening "now" – "presencing", a concept introduced by Otto Scharmer meaning, learning from an emerging future (Tobergte & Curtis, 2013:1); then "futures thinking" about the environment (speculating future scenarios). Backcasting concepts were again reflected upon as an adjustable lens to analyse the discursive prototype in this case.

2) **Design research:** Design research cannot be separated from research. Research in itself is a form of restricted design (Glanville, 2015:13-14) and still needs to be further investigated. However, in this context we refer to design research as research conducted through design which is practice-based and hands on. Design research is usually explored through methods such as PD or co-design where people are largely involved in the design process. Design research is visually based and combines methods from ethnography (Nova, 2015:19-22) exploring design thinking strategies which sometimes end with an action describing future scenarios (design fiction). Design fiction permits endless speculations through which cultural artefacts can emerge, generating discussions and telling stories (Morrison, 2014:1-3). Designers and the other participants in this case envisioned futures of CC and environmental sustainability through the designerly approaches in developing the storied artefact.

3) **Storied artefact:** storytelling is done through visual means. In certain instances it is characterised by performance to communicate ideas about a particular concept in design research activities. The use of visualisations such as photos and illustrations are used to tell stories. Through these images, words and light we get to know ourselves (Leggo, 2010:47-48). An example of this is a photograph which can tell many stories. In this investigation, stories of climate futures were projected using images and other visual elements which resulted in the development of the prototype that took the form of a storied artefact.

Context and Participants

Context in design research is very important. The context of climate futures and that of the participating students informed the methods used in the investigation. The participating students were at Bachelor Level Industrial – Surface and Graphic design education. The participants who formed the nucleus of the investigation were approximately between 15-20 people from different African countries who were studying design at the UoT. Out of the 11 participating design educators, one was from Europe and 10 were from different countries in Africa. The design educators and students from Africa originated from South Africa, Ghana, Kenya and Zimbabwe. The educators were based in three different universities - two of them from Cape Town, South Africa, and one from Norway. The students were tasked to comment on CC through visual means. The process was facilitated by educators from the various design disciplines. In this paper, we reflect on the design activities based on our involvement in the process as participant observers.

Methodology

Research through a design-led approach was employed for the investigation which situates the study within a qualitative research design framework. Participatory Action Research (PAR) philosophies and methods informed the investigation. Hence, attributes of PAR such as "shared ownership of research, community-based analysis of social problems, and an orientation toward community action" (Kemmis & McTaggart, 2007:273) informed the methodological approaches in this case. Conducting the study through PAR as a qualitative research methodology brought to bear the natural feelings of individual participants to the design of the artefact. Their feelings were revealed in the process of the study without control or manipulation (Macdonald, 2012:34).

PD and co-design were the main methods employed in this inquiry from the design research domain. The multi-method visually-based approach permitted participants to collaborate and develop concepts in a shared design space without barriers (Debrah et al., 2015:69-72). Participatory and co-design methods which were applied through visual thinking strategies reduced power structures in the design process (Holmlid, 2009:4). Students and educators knitted well because of the participatory learning environment which existed from the start to the finish of the project (Chisin et al., 2014:184-185). The creative learning environment outside the formal educational space permitted the easy conceptualisation and development of ideas for the discursive prototype. The development of the artefact was categorised into six major phases as shown in Figure 3. The first phase starts from the pre-design stage which involves the pre-planning stages of the entire project.

The pre-planning stage involved the developing of design briefs, preparing logistics, budgeting, project plans, organising and contacting the relevant institutions and persons at the forefront of the project. Next was the design and development process which started from ideation to exhibition. The post design phase, was mainly characterised by reflections based on the idiosyncratic experiences of the participants. These happened after the exhibition on site, at the UoT which ended the prototype design phase. In the process, new ideas evolved on taking the artefact further to discuss climate futures. We have highlighted the methods employed during the actual design phases of the prototype which occurred between the ideation phases to the exhibition phase (see Figure 3).

Methods: Artistic methodology which is a multi-method visual technique (pluralist approach) was employed in this investigation. Visual-based methods such as co-design, storytelling, role-playing, illustrations, photography, video and audio recording were the main methods used for the data gathering (Gray & Malins, 2004:72). Students and educators collectively brought their efforts to design the artefact with the purpose of conveying messages about CC. Visual-based methods facilitated the brainstorming process within the shortest period while working collaboratively as a team in the designing of the artefact (Collins, 2010:29). It enabled the discussion of ideas between educators, students and the public. Environmental sustainability and CC concepts were animated in the process to sensitise the participating members on the need to sustain the environment. A design blueprint of the tools, methods which aided the design of the storied artefact are mapped in Table 1.

Design and Development Process

The artefact was designed in four major phases which was conducted iteratively. The first phase focused on ideation: conceptualising, defining, developing and building prototypes. The second phase focused on constructing and finalising the selected prototype and the design build on site at the UoT. The third phase focused on the journey from Cape Town to Namibia, and completing the artefact at the PDC (2014) conference where it was shown as an installation in an exhibition at the final phase (see Figure 4). After these activities, students reflected collectively in a focus group discussion based on their experience of building the mediating artefact.

Co-designing the storied artefact: This was mainly carried out in the first phase of the project and subsequently in the other phases of the design process (Figure 4). The design process was characterised by prolific ideation and experimentation from the students. Their concepts were further crystallised after extensive research, through the design research process and design thinking. Co-design methods facilitated active experimentation and harvesting of ideas collaboratively with participants (Sanders & Stappers, 2014:12) on climate futures and scenarios through the art of making. Participating students developed numerous ideas through the visual-based brainstorming process (Figure 5a & 5b) and outcomes were collectively selected by team members for further development (Collins, 2010:28-29). Facilitators and participating students selected roughs which were refined to obtain the final concepts (Andreasen et al., 2014:276). Also, the process was characterised by visualisation, performance art and visual presentations to concretise ideas that were generated by students to co-create the prototype. The final concepts were then used as blue prints to develop the miniature prototype which served as a starting point to further develop and finalise the prototype through the design processes (Figure 5b). Most of the ideation occurred at the pre-design phase of the design process (Sanders & Stappers, 2008:6) and these miniature prototypes informed the design of subsequent prototypes (Chisin et al., 2014:184).

A large scale model of the artefact (prototype-2) was then co-constructed with participants during the second and third phases of the design process. During these phases, students worked collaboratively with their educators and community members on the journey from Cape Town to Namibia. Participating members made their contributions to the prototype by adding found objects and expressing their feelings in relation to CC and the environment through visual means. Some made hand prints on the artefact as a way of empathising with the impact of CC on the environment. At the fourth phase, the semi-finalised discursive prototype arrived in Namibia at the destination where it will be exhibited. Next, participants co-constructed and actively worked on finalising the artefact onsite.Through experimentation, participants added suitable recyclable materials they have collected in and around Namibia to complete the storied artefact.

Result: The experimentation resulted in a finished model of the artefact. This piece was built from recycled materials including plastic bottles, car tyres and foam, amongst other custom procured materials. These found objects were used as the primary materials in developing the artefact (see Figure 6 & 7). Metaphorically, the artefact represented CC and its impact on the environment to participating members (Chisin et al., 2014:184). Also, using the found materials for the artefact was another practical way of demonstrating reducing, recycling and upcycling through a mediating artefact.

Participants then added their personalised stories to the artefact which were documented in the form of artistic writings and images. The stories generally emerged from their idiosyncratic experiences obtained throughout the journey as well as the impact of CC on the environment (Figure 6 &7).The finalised artefact was unveiled amidst poetry recital and performance art by participants. Members of the public were invited to interact with the installation as a way of communicating and sensitising them about CC. An electronic built-in system at the middle part of the storied artefact (see Figure 6 & 7) enabled the public to experience the journey of the discursive prototype and it was a delight to watch.

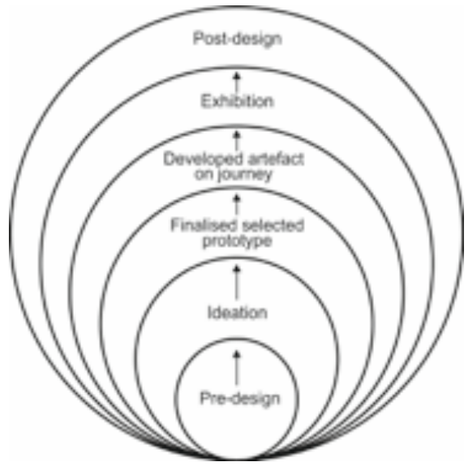


Figure 3. Cross-sectional view in the designing of the storied artefact – from pre-design to post design

Discussion

Historically, humans have created tools that shape their existence and transform their experiences. Designers have contributed to the developing and shaping of these tools to

confirm and meet the needs of the people within a particular environment (Manzini, 2015:7). These tools which may be in the form of artefacts or systems may be passed on from generation to generation. As such learning is not an isolated activity but it is rather based on a collective shared understanding shaped by cultural and historical experiences (Shieh et al., 2013:406). Learning is a participatory activity. In the process of knowing, we constantly interact with tools and constantly construct tools based on our activities (Barab et al., 2004:201). In this case we constructed a "storied" artefact to discuss CC through a participatory learning process. It is evident that the artefact produced in this research context was conducted through design-led research. For this reason, the analysis of the storied artefact was not only influenced by our experiences as researchers but the artefact opened unexpected possibilities too (Savic & Huang, 2014:13). We explored backcasting concepts as a lens to forecast sustainable futures through designerly ways of knowing. As such three concepts–backcasting, storied artefact and design research were inter-played for the analysis. They were explored as an adjustable lens to discuss the outcome of the investigation conducted with the participants in the local context (Figure 6).

Environmental sustainability and CC is reconnoitered as a lens to discuss our experiences based on the thematic areas employed in the design of the discursive prototype as shown in Figures 2 and 6. However, the three main concepts of backcasting served as the pillars for the discussion of the artefact. Climate issues and environmental sustainability falls within the first theme of backcasting strategies which enables us to envision climate futures with participants. CC demands that society change the way we live in order to minimise the impact of climate futures on the environment, to make the world a better place. The second theme of backcasting, focuses on visualisation of ideas which can be in the form of systems or objects that propagate sustainable futures in relation to the environment. In this case, the abstractions and concepts on the environment were made visual in the form of a storied artefact by participating students, educators and community members. The third theme on backcasting was based on the integration of the images and visual elements found in the environment which creates the awareness of the present state of CC and to forecast climate futures and its impact on society. The discursive prototype which was a travelling artefact served as a tool to generate discussions and communicate issues of CC in the various communities where it was shown. The storied artefact served as a communicative tool, igniting a joint action of the society on climate futures. Also, it presented a foresight of the possible impact of harsh climatic conditions and its long term effect on the environment, livelihoods and global economies.

Design tools and methods	Mapping data gathering tools and methods
Observations **Observation for ideation** **Participant observation**	 The process served as a tool to analyse existing objects – (i.e. Biomimicry techniques were explored through observation for ideation and conceptualisation of the storied artefact) This served as a tool for students, educators and community members to actively participate in the design of the discursive prototype.
Questionnaires (elicitations)	This was used as a digital reflection tool to elicit conversation and obtain feedback from participants. The reflections were obtained after every milestone in the design process.
Co-design	The process served as a viable tool for discussion and ideation in the various phases of the design process.
Story-telling/ narratives	Storytelling served as a tool to describe the climate issues and environmental sustainability. It was used to describe concepts and historical views and their relationships on climate futures. Storytelling was a useful tool for community members to share ideas and tell stories about climate issues in their local contexts with participating students and educators from UoT. Storytelling served as medium to enact and tell CC experiences as part of the exhibition at the PDC, 2014 conference. Storytelling was used as an additional tool for reflections at the post design phase of the study at the UoT. Here, students and educators verbally shared their experiences in focus group discussions and one of the design educators served as the lead facilitator during such interactions.
Focus group discussion	This served as the main avenue to consolidate ideas and reflect on previous activities, making plans for the next design exercise and identifying the strategies to improve the design and development process.
Performance/ role play	This was mainly used as part of the exhibition process as performance which was integrated as part of the installation of the artefact.
Illustrations	These were mainly used for the ideation and visualisation of concepts.
Photos, video and audio recording, Short film	Documentation and recording of events, activities and recording stories about CC. Visualising concepts as part of the discursive prototype.

Table 1. Blueprint – design tools and methods used in design of the storied artefact (Source:authors)

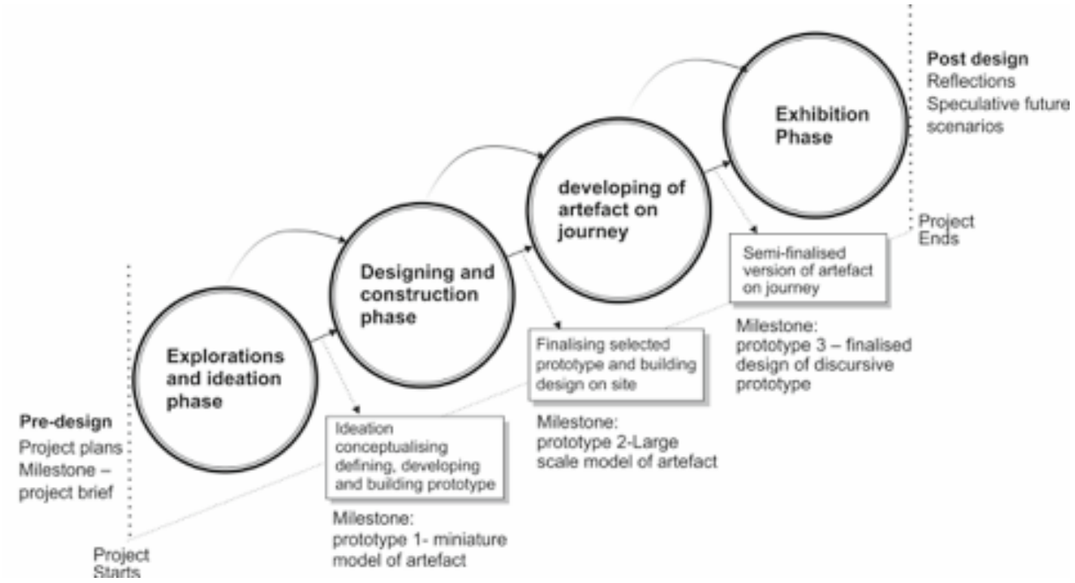


Figure 4. A four phase conceptualised model on developing a discursive prototype

Exploring the design of a "storied artefact" with participants illustrates compelling and designerly ways of commenting on and encountering first hand instances of CC in the environment. The process was visual, tangible, adoptable and supports designerly ways of thinking (Mattelmäki, 2006:35) through experiential learning. Practically, participating members were able to experience firsthand the negative impact of CC on the journey to Namibia. Developing concepts using endangered species such as the tiger fish found in Namibia, was executed from a contextualised African perspective. The artefact challenged notions around CC and the environment. The sensitisation of participants and viewers occurred through a prolonged interaction with the stories that accompanied the design and journey of the fish (Chisin et al., 2014:183). The processes used in developing this artefact were not forced, but they evolved through experimentation to the growing "storied" aspect of the fish. As her persona developed, Fiscilla the fish became a powerful embodiment of abstractions/ concepts made concrete by students who animated impressions around CC to illustrate ultimately what they have learned in the process of designing and making her.

Conclusion

Environmental sustainability and CC requires the sensitisation of the public and their collective efforts to address emerging issues on this "wicked problem" through design thinking as explored in this case. Although, the long-term impact of the project in the territories where it was conducted was not immediately measurable, some short-term outcomes were obtained. It was evident that, participants become aware of CC matters and its long-term effect on the environment.

We observed that students were excited learning in the real world and interacting with community members on the journey. Students learned how to use found materials available to them in their communities to develop the storied artefact. Identifying found objects in the environment was a way of sensitising participating students and community members on the negative impacts of these elements in the environment. The storied artefact served as a viable mediating tool to communicate future scenarios on CC and its impact if we continue to deplete the environment.

What worked well in this context was the collaborative team efforts by staff and students to develop the artefact. Also, the contributions made by participating members in the communities where the artefact travelled through liminal creative spaces enhanced the design of the prototype. The cross pollination of ideas by the various staff and students multidisciplinary groups improved the overall look of the discursive prototype. The discursive prototype became a living boundary object to illicit conversations on CC. This made participants passionate about the storied artefact and still remains in their memory. We speculate that knowledge gained by participants on CC will be animated to the public in order to attain global long term goals on environmental sustainability.

However, emotional and psychological issues such as the fear of the unknown and culture shock on developing the storied artefact out of the usual learning spaces needed to be managed. Challenges that were encountered were that, some students were uncertain about working in a different environment and spaces. They were uncertain of what possibilities could emerge and as such did not join the trip. Meanwhile, the other students who travelled and worked on the trip had their difficult emotional moments and needed reassurance and support. However, this was managed by educators and peers offering constant support to the students.

In terms of the methodological approach and processes, we have learned that the project requires a lot of planning at the forefront. Factors such as logistics, medical aid, and psychologically bracing the minds of the students on the uncertainties at the beginning of such participatory projects are very important. Additionally, it is important to allow the experiences gained by the students to

inform the design of such discursive prototypes. This way participating designers and the public can speculate climate futures and develop scenarios through designerly ways to communicate environmental sustainability. Subsequent research outcomes will look into theorising, analysing the PD unit of our discursive prototype – storied artefact. Design educators are encouraged to experiment with some of the designerly ways of knowing CC and designing storied artefact as we have explored in this paper and apply to suitable contexts. Through this investigation, we call for a concerted action from society, policy makers and educators towards mitigating the adverse effects of global warming and CC in Africa. It is our hope that we will actively take steps as a society, towards global reduction of anthropogenic greenhouse emissions.

Acknowledgment

Special thanks to all participating students and community members in designing the discursive prototype. To all our funding partners, National Research Fund (NRF), National Research Council of Norway for collaborative project C_SAN Futures: Designerly strategies for scaling up climate change approaches in South Africa.



Figure 5a & b. Brainstroming and ideation processes to develop the storied artefact



Figure 6. Building and installing storied artefact onsite

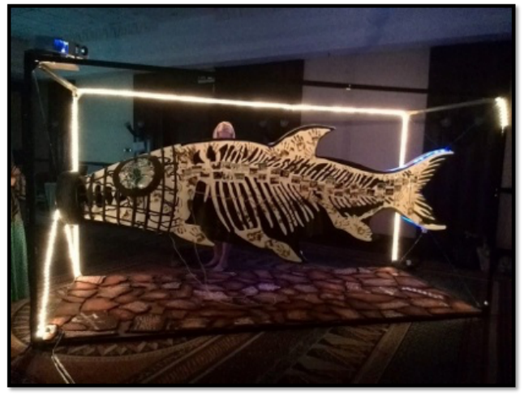


Figure 7. Installation of the storied artefact

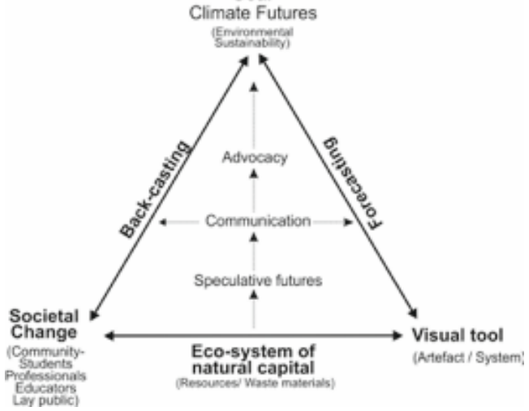


Figure 8. A schematic framework of analysing the discursive prototype

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Is fashion in need of a paradigm shift?

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ABSTRACT

The objective of this paper is to explore the potential benefits of integrating interdisciplinary perspectives and research areas between engineering, aesthetics and users in the making of fashion apparel. The purpose is to obtain a more holistic approach to the working processes employed by the stakeholders in their allied effort to produce fashion products that are aligned with the preferences of the users. The intention with a holistic approach is to create more sustainable products as well as a more sustainable workflow to reduce the number of wasted samples. In this paper, we understand sustainability to be a process focusing on consideration. That is, a process in which stakeholders at once reconcile their work approaches, and concomitant consideration in the approach to the users in an early stage
The research proceeds through two entry points. The first opens up to a research area, which addresses the complexity of fit and sizing and its impact on women's buying behavior and self/self-esteem; this research looks into aesthetic fit, technical fit and commercial fit through empirical research and 3D scanning. The second entry point opens up to a research area, which addresses trend mechanisms and the correlation between fashion trends and customer preferences with focus on older age groups. The research is work in progress and the paper elaborates on the process of combining the empirical research from the two research areas and the rationale for selecting the binary position.

Keywords

sustainability, alignment, design education

INTRODUCTION

As the Fashion Industry has a devastating impact on the environment, it is essential to research for different approaches to reduce this impact. Most initiatives aimed at improving the Fast Fashion Industry's environmental impacts appear to be aimed at the actual production cycle, primarily focusing on the production of raw materials. We argue that by looking at the workflow of the development process and the philosophy behind the product it is possible to create products that have a higher hit rate as well as a longer life cycle because this links to the user at an earlier stage. Through interlinking two doctoral projects that couple engineering, aesthetics, and users from two different perspectives, this paper promotes a "prior to production" approach and explores the potential benefits of integrating interdisciplinary perspectives into both fashion research and education.

Background and Motivation

The fast pace of the fast fashion system with its multiple fashion seasons and increasingly short deadlines represents a system with an overload of products and overlapping processes. The intensifying speed and demands for new products has resulted in reduced focus on alignment and consideration in the creation of apparel products. Without this alignment, the user encounters inconsistencies; design inconsistency, product inconsistency and fit inconsistency. Fashion products are not only about aesthetics, how they perform functionally is also important for consumers. This lack of alignment between products and users consequently results in an increased amount of waste. This is generated initially in the actual process of creating apparel products where numerous prototypes and samples are generated by the production sites and dispatched to design departments as part of the established everyday practice in the design process. Despite the numerous samples and prototypes market surveys reveal that up to 50 % of female consumers (Poulter, 2015, Mintel, 2015) claim that they are unable to find clothes that fit, flatter their body types or meet their preferences (aesthetic and functional) indicating that there is a gap between the products available and user needs and expectations. This influences and contributes to a large amount of products, being either sold at a reduced price or ultimately destroyed. The above-mentioned factors influence on the Fast Fashion system's devastating impact on the environment and the fashion industry is now allegedly the second largest polluting industry in the world (Conca, 2015).

This has attracted increased critical media attention and the Fashion Industry has responded with a variety of initiatives by amongst others: F.I.T. New York, Sustainability Conference (April 2016), H&M (Bain, 2016), Copenhagen Fashion Summit. Responsible Innovation. (Copenhagen Fashion Summit, founded 2009) However, there remains an obvious inconsistency between the business strategy of the fast fashion system and the philosophy of sustainability. Based on a holistic approach The Life Cycle Assessment (LCA) evaluates a number of factors in a products life cycle; raw-material production, manufacture, distribution, use and disposal.

Further a report published by The Danish Environmental Protection Agency in 2014 (The Danish Environmental Protection Agency, 2014) identifies five key impact areas and their perceptual influence in the making of fashion, all of which are related to production. Of these five impact areas, the second largest relates to the tailoring of apparel with a 27% environmental impact, surpassed only by the impact of raw material production at 30%.

However, combining empirical research from interdisciplinary perspectives, we approach sustainability from a “prior to production” perspective, re-examining the philosophy behind the product and relating to the user at an early stage, thereby aiming at the creating of products with a longer life cycle and improved hit rate. In order to assess the diversity in customer need and preferences there is a requirement to focus on creating a design/ fit philosophy/ strategy that incorporates a diversity of options and differentiation in product categories and fit, without increasing the number of styles required. Our research approach is to increase the attention on the product development lifecycle from idea to market, concentrating on intangible elements before turning to tangible products with “a longer usable life and that are more highly valued than typical consumables” (Clark 2008:440).

As senior lecturers in design and product development, we have a duty to approach sustainability from a “better future” perspective and acknowledge that we as an industry have a challenge and a responsibility for our environment. Historically, fashion-related educational programs have leaned towards supporting the interests of the apparel industry and its changing conditions. If we are to replace the current fast fashion paradigm representing, faster, cheaper and more with a new paradigm with a focus on consideration, sustainability and alignment it is essential that those involved in moving design education forward take the initiative in order for current and future students to be the standard bearers and ambassadors for a new approach.

Interdisciplinary Collaboration

This paper presents parts of research areas included in two individual Ph.D. projects that subsequently contains individual objectives and approaches. The empirical research aim and methodology presented in this paper will however be conducted in interdisciplinary collaboration and with a holistic approach using Design Thinking principles as a method to match people’s needs with what is technologically feasible (Brown, 2009, McElheron & Harsaae, 2015). One research area addresses the complexity of fit and sizing and its impact on women’s buying behavior, self and self-esteem. The research examines aesthetic fit, technical fit and commercial fit through empirical research and 3D scanning. (Figure 1) The other area of research addresses trend mechanisms and the correlation between fashion trends and intrinsic customer preferences including how these preferences are formed and how they influence on product choices. (Figure 2)



Figure 1. Research area 1 Figure 2. Research area 2 Figure 3. Interdisciplinary approach

The rationale for approaching these subjects in an interdisciplinary collaboration (Figure 3) is the recognition that the common denominator of the two research areas is the woman and her relation with apparels products. Combining the two areas provide the opportunity to obtain insights to approach to the product development process holistically and enable us to create strategy and philosophy addressing the aesthetic, fit and functionality behind the products. Thus motivating to contribute to make more sustainable and considered fashion.

As the apparel market becomes progressively more competitive and market driven, apparel manufacturers and retailers must cultivate the ability to design and develop products responsive to the changing wants and needs of their consumers in order to remain competitive and profitable (Oliver, 2014, Brown, 2009) Consumers today desire appropriate fitted apparel that correspond with their preferences. However, women have difficulties buying clothes that fit them well or flatter their body type. The extent of the problem has serious consequences. A Mintel review (2015) has indicated that 50 % of female consumers claim that they are unable to find clothes that fit them well. In 2000, 57 % stated that their body shape did not fit into standard sizes and even went as far as to claim that manufacturer’s did not make clothes for real bodies (DesMarteau, 2000). A Mintel review from 2015 (Poulter, 2015) reveals that 63% of women’s request other size opportunities (petite or larger sizes) than what is available, indicating that the problem still is substantial. Apparel fit and sizing problems are costly and frustrating not only for the customer but also for apparel manufacturers and retailers, where additional expenses are incurred due to returned clothes, lost sales, brand dissatisfaction or time wasted in the fitting room. As frustrating, as these problems are, the costs are also devastating for the environment reflected in the amount of generated waste and destruction of clothes.User center research has outlined an interesting preference hierarchy before and after trying on clothes. While picking clothes to try on, customers start out with one set of preferences, which focus on brand, price and looks, however their preferences changed considerably once trying on the clothes. Now fit and appearance became their main priority. The initial product choice relates to the customer’s preferences and values, and is a “crucial dimension in the articulation of personal identity”. (Entwistle, 2015), however the fit and sizing turns out to be a determining factor for selection and purchase.

Based on the idea that clothes serve as a “mediator between the body and the social world.” (Entwiste, 2015) our research seek to approach this from interdisciplinary perspectives. The collaboration provides us with an outstanding opportunity to address the same group of women from a physiological perspective as well as from a cultural and sociological perspective. In responding to the customers’ wants and needs, our focus is on women’s preferences in clothes, and on the possibility of achieving insights that contain multiple perspectives to customers’ values and preferences.

Research Design & Methodology

The objectives of this research are to identify the relationship between product, product categories, product performance, user preferences and expectations. Further, this study aims to identify the sweet spot between individual (tailor made) and fast fashion apparel thereby identifying a feasible and realistic balance between customised and fast fashion as illustrated in figure 4. This balance is of relevance to most players in the industry as they are in the mass market and are forced to make a profit based on economy of scale. The research focus is to contribute to improvement of the industrial fashion system, addressing the mass market.

The methodology analog/antilog (Mullins, Komisar, 2009) has been employed to analyze two practices used in the fashion industry; Tailor made and The Fast Fashion system.



Figure 4. Analog/Antilog Tailor Made & Fast Fashion System

The objective of applying this methodology was to investigate and establish the advantages and disadvantages of both practices and analyze which factors were possibly transferable to create a new approach. Working with the notion that tailor made products presumably have a high hit rate, as it is customised, fitted, and made according to individual preferences. In contrast, the Fast Fashion system is characterised by a high efficiency and well-functioning structures with respect to production and distribution, but also a low hit rate, as market surveys reveal that up to 50 % of female consumers claim that they are unable to find clothes that fit, flatter their body types or meet their preferences (aesthetic and functional).

The key findings of the pre-study (ref. figure 4) suggest a number of key elements necessary to improve the hit rate of the Fast Fashion system. Based on the identified key elements a research design was outlined with the purpose of conducting further primary research on how these factors influence and contribute to the formation of the key elements.

The research design, is formulated as a strategy aimed at collecting, recording and analysis of the data necessary to complete the research. The research consists of six successive steps and will be conducted from August 2016 to December 2017. Findings and analyses will regularly be presented to peers and to the industry

The research is founded on a three-way research strategy including quantitative, qualitative and observational based approached. In this paper, we present and communicate the methodology of step one (Figure 5).



Figure 5. Interdisciplinary approach

The primary research of step 1 comprises of two forms of data collection; quantitative and qualitative. Quantitative (statistical) data will be recorded using questionnaire to clarify women’s relation to apparel followed by 3D body scanning and to identify body measures and body characteristics to be used for the development of divergent mathematical formulas for 2D pattern construction. The collection and recording of qualitative data comprises of interviews to gather in-depth understanding of women’s behavior, preferences and values in relation to apparel products. The interviews will be semi-structured, including interviews adopting a phenomenological approach to reveal the experiences and perceptions of individuals from their own perspective. (Lester, 1999) and addressing the women’s experiences in relation to apparel in social contexts. To reduce bias, photo documentation, used as visual articulation of preferences, will support the interviews.

The women participating are selected based on demographics to achieve a representative selection of Danish women in relation to residence and subsequently divided into age groups from 16 - 80 years. To obtain a representative sizing survey the women are selected and recruited using statistical calculation representing 0,75 per 1000 of the relevant population group.

The first pilots established that women’s bodies demonstrate a higher diversity in shapes and sizing than the standard sizing system the Fast Fashion system provides. Fifty-six body

measures have been analysed to identify the variations, needed to satisfy a broader population. Further, the pilots outlined a variety in preferences and values (socially, aesthetically and functionally) across age groups and product categories. The preliminary findings reveal a high complexity as preferences vary depending on the product categories and context. With the aim to reduce the complexity, the research progress is currently addressing ways of clustering and categorizing the findings into a system feasible for Fashion Industry.

Conclusion

As the Fashion Industry has a devastating impact on the environment, it is essential to research for different approaches to reduce this impact. Most initiatives aimed at improving the Fast Fashion Industry's environmental impacts appear to be aimed at the actual production cycle, from the production of raw materials to distribution of commercial products and the later disposal of these products. However, this paper promotes a "prior to production" approach, where the philosophy behind the product is linked to the user at an early stage with the aim of creating products that have a longer life cycle thereby postponing the disposal of the product.

The research in progress will establish the possibility of developing alternative approaches to the making of fashion, with more focus on sustainability, alignment and the philosophy behind the products, thereby reducing waste and improving the Fast Fashion system's impact on the environment.

Key findings from the research will be analyzed and recommendations for alternative approaches will be formulated. In collaboration with industry, an interdisciplinary Masterclass at VIA Design will test the recommendations and evaluate work processes.

The results will be collated and presented in 2018 and potentially incorporated in future curriculum as future students and graduates will be the standard bearers and ambassadors for the new approach.

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Charting deep metaphors that reveal Millennials' mindsets of Fast and Slow fashions

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ABSTRACT

The term 'slow fashion' was coined by Kate Fletcher to counter the growing trend of the 'fast fashion' industry. In recent years, the clothing industry has been dominated by fast-fashion that has spurred overconsumption in which users buy more than they need. This has created a throwaway mentality.

The aim of this study is to develop a critical-creative thinking framework based on the understanding of and insights into how the Millennials view apparel consumption. To construct this framework, the authors leverage the 'deep metaphors' identified by Gerald and Lindsay Zaltman to create viewing lenses that reveal the users' rational and emotional state of mind concerning sustainable fashion. This study examines the seven deep metaphors (balance, transformation, journey, container, connection, resource and control) that the Zaltmans described as being lasting methods for perceiving information and progressive collaborations involving the brain, body and society. Data were collected from over 100 millennial college students through surveys and focus groups. Visual thinking and user journey mapping activities were conducted to gain a deeper understanding of what the Millennials do, think and feel about responsible consumption. The authors summarise various aspects of 'fast' and 'slow' fashion mindsets through the basic viewing lens of selected deep metaphors using collages of photographs and illustrations, narratives and visual stories, information graphics, process diagrams, quotes, statements and facts. The results of this study can be applied to identify new mindsets for educating and inspiring responsible approaches to the apparel industry by encouraging users to embrace 'slow' and sustainable fashion.

Keywords

slow and fast fashion, millennial generation, deep metaphors

The term "Slow Fashion" was coined by Kate Fletcher (2007, 2008) to counter the growing trend of the "Fast Fashion" industry, which has exploded in recent years. In order to understand "Slow Fashion", we need to explore the attributes of "Fast Fashion". In her article titled, Slow Fashion Movement: Understanding Consumer Perception – An Exploratory Study, Sanjukta Pookulangara (2013) writes, "The apparel industry currently is dominated by fast-fashion and just-in-time production leading to increased fashion trends. This in turn has spurred overconsumption where consumers buy more than they need, which in the end results in fashion waste" (p. 200).

Nayelli Gonzalez, a sustainability innovation strategist and storyteller, states that the proliferation of e-commerce sites makes it easier to purchase apparel online which has in turn created a throwaway mentality that has become the fashion industry's Achilles heel (2015). She believes that in order to thrive, global apparel brands will need to reinvent their business models, embrace the circular economy and creatively invite consumers to reduce waste and become more sustainable. A recent study by the Boston Consulting Group found that 50% of its 4,000 US participants, ages 13 to 34, believe brands "say something about who I am, my values, and where I fit in," while 48% of millennials choose to buy from brands that are active in supporting social causes (Kibbe, 2014).

This artefact presents current apparel shopping habits and mindsets of millennials based on their perceptions and practice of "Fast" and "Slow" Fashion. Data was collected through two phases of design research with the permission of an Institutional Review Board at a large public university in the USA. The first phase was an online survey consisting of open-ended questions collected from over a hundred millennial college students. A thematic coding guide was used to gauge where participants fall in the scope of "Fast" and "Slow" Fashion. The data collected from the survey helped the authors identify patterns in shopping and caring for clothes from the Millennials' perspective. In the second phase of the research, focus groups were conducted with smaller groups of participants selected from phase one. Visual thinking and user journey mapping activities were conducted to gain a deeper understanding and develop insight on what the Millennials do, think, and feel about responsible consumption. Additional data collected from popular media scans and literature reviews provide a broader perspective of the latest developments of sustainable fashion and current social mindsets.

The key objective of this study is to develop a critical-creative thinking framework based on the insights and understandings of what Millennials do-think-feel about responsible consumption. To construct this framework the authors leveraged the “Deep Metaphors” identified by Gerald Zaltman as viewing lenses to reveal the consumers’ rational and emotional state of minds on sustainable fashion. Zaltman, Professor and co-director of the Mind of the Market Laboratory at Harvard Business School, describes “Deep Metaphors” as lasting methods of perceiving information and a progressive collaboration between the brain, body, and society (Zaltman & Zaltman, 2008). His research team came up with seven metaphors that have the most universality among consumers based on twelve thousand in-depth interviews for more than a hundred clients in over thirty countries. These seven Deep Metaphors are summarized as: 1) Balance: how justice, equilibrium, and the interplay of elements affect consumer thinking, 2) Transformation: how changes in substance and circumstances affect consumer thinking, 3) Journey: how the meeting of past, present, and future affect consumer thinking, 4) Container: how inclusion, exclusion, and other boundaries affect consumer thinking, 5) Connection: how the need to relate to oneself and others affect consumer thinking, 6) Resource: how acquisitions and their consequences affect consumer thinking, and 7) Control: how the sense of mastery, vulnerability, and well-being affects consumer thinking (Zaltman & Zaltman, 2008). These metaphors capture what anthropologists, psychologists, and sociologists call “human universals,” the traits and behaviors found in nearly all societies (Brown, 1991; Kovecses, 2005).

The findings for this study were presented in the form of an artefact consisting of a large format poster. Here, the authors showcase how this subconscious “Deep Metaphors” strategy could be applied to inform the development of a critical-creative thinking framework. The information presented summarizes various aspects of “Fast” and “Slow” Fashion mindsets through the basic viewing lens of a selected Deep Metaphor with collages of photographs and illustrations, narratives and visual stories, information graphics, process diagrams, quotes, statements, and facts. An information hierarchy was established to create a holistic visual communication tool in order to present the information for this exhibition. The result of this study could be used to identify new mindsets for educating and inspiring responsible approaches in the apparel industry by encouraging consumers to embrace “Slow” and Sustainable Fashions.

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The time it takes

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ABSTRACT

‘Order your sunlight online!’Three motorised mirrors on the Sint-Maartensdal site gave the occupants of apartments facing north the opportunity to enjoy direct sunlight. All they had to do was visit a website, give their apartment number and at the requested time one of the mirrors would turn to reflect the sunlight through their window. In the 60’s, one of the largest social housing complexes in Leuven, Sint- Maartensdal, was built to create a modern social community. Renaat Braem, a modernist with a social mission, was its architect. He saw architecture as an instrument for building a better society. To create this better environment he did not only use stones, but included light, water and green surroundings, which he saw as essential elements. Braem wanted, ‘with the deliberate organisation of space, to create a bright island filled with the joy of life amid the city’s depressing chaos.’ The front of block 1B, one of the six blocks in Sint-Maartensdal, is always dark. Only in the morning do the residents of Block 1B catch a ray of sun if they lean their head out the window. Strange. Built on a utopia of light, a sense of community and green areas. Then this is the result: a dark block with hundreds of residents who barely know or talk to each other. How could this occur? Did Braem encountered a conflict during his design process, which made it impossible to create good architecture and at the same time a social relevant design? And did this conflict occur from his specific bird’s eye design perspective?

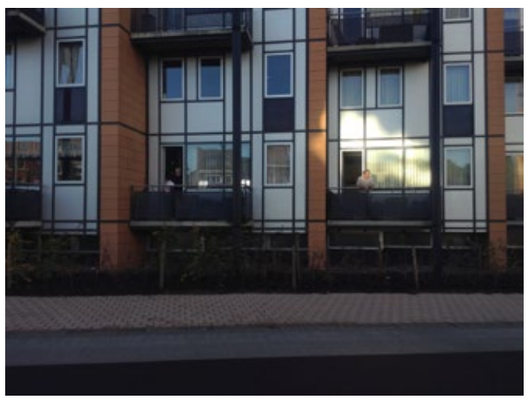
Keywords

interactive, utopia, city

Three motorised mirrors at the residence Sint-Maartensdal (Leuven, Belgium) gave the occupants of apartments facing north the opportunity to enjoy direct sunlight. All they had to do was visit a website, give their apartment number and at the requested time one of the mirrors would turn to reflect the sunlight through their window.

In the 60’s, one of the largest social housing complexes in Leuven, Sint-Maartensdal, was built to create a modern social community. Renaat Braem, the architect, saw architecture as an instrument for building a better society. He was a modernist with a social mission. To create this better environment he did not only use stones, but included light, water and green surroundings, which he saw as essential elements of his designs “ (...) with the deliberate organisation of space,” Braem wanted “to create a bright island filled with the joy of life amid the city’s depressing chaos.” It’s always dark in the front block of building 1B, one of the three herringbone-shaped blocks on the Sint-Maartensdal site. Only in the morning do the residents of Block 1B catch a ray of sun. Strange. Built on a utopian dream of light, a sense of community and green areas. And this is the result: a dark block with hundreds of residents who barely know or talk to each other.

Fascinated and inspired by this contrast between the architects socially engaged ideas and the resulting project, ’There is the sun’ wanted to come up with a solution for this inequality and question Renaat Braem’s idealistic ideas and approach. Taking the site’s late renovation as a starting point, ‘There is the Sun’ aspired to bring about a symbolic restoration by visualizing and rethinking the original utopian dream and the social-artistic ideas behind the Sint-Maartensdal site.



Sint-maartensdal

Let's travel back in time: 1955 to 1960. In these years Braem was working on his first sketches of Sint-Maartensdal. If you look at his designs from a bird's-eye perspective, you see that he has chosen a perfectly symmetrical shape consisting of hexagonal towers and herringbone-shaped blocks. The three towers form a triangle around which the long blocks were centred in a V-shape. The entire design was additionally placed in line with major street axes around the site.

To solve the sunlight problem it would have been enough to rotate the left block 15 °. In doing so, the symmetry would obviously have been completely disrupted. We can imagine that when staring at his blueprints, Braem must have been in conflict between the symmetrical beauty of his design and his ecological and social ideals. Eventually an aesthetic aspect, symmetrical beauty, took the upper hand over social and environmental objectives. Social ideals seemed incompatible with artistic ambitions.



There is the Sun

Similarly to Braem, I try to develop a socially relevant artistic practice that goes beyond mere aesthetic and formal interests. Like Braem, I experience conflicts in the attempt to connect daily life with my art and practice. But where Braem took to the drawing board hoping to change real life contexts with architecture, I try to work in and from real life contexts in the hope of changing something? Maybe. But first and foremost, I do it to create art.

Let us descend from the bird's-eye view of Braem's design table to the heart of Sint-Maartensdal where I realised 'There's the sun' in 2013, fifty years after Braem's design. How was this project realised and which conflicts arose?

Cranes, engineers, computer programs, sketchbooks, welding and digging ... A lot of technical and artistic work had to be done in order to create 'There is the sun'. But this labour was only half of the work. Before, during and after installing the mirrors, I set up fieldwork in the area. I personally visited all 60 apartments in order to present the project and to establish an online calendar with the residents. I built a local communication system using flyers, information boards in the street, and sending letters to the residents. On the lawn in front of Block 1 Wide Verknocke painted a large chalk drawing that was only visible from the apartments.

All these efforts resulted in friendships and interactions with the neighbourhood. But it also made the project operative in the people's homes. Along with the technical work, these efforts created the conditions within which the work could be experienced by the residents.

Francois, who has now moved to another apartment in Sint-Maartensdal still has three pictures of this project in his new home. It was there that 'There's the sun' could be experienced in it's most vivid and real apparitions.

Without these people who experienced the work as a living thing in their homes the work would not 'exist'. What would remain would be mere representations in museums, galleries and websites: stories, photos, videos, texts, memories...

Implementing a project to people's everyday lives and/or creating an artistic project within and with a real context, means you have to invest a lot of time in building relationships. These relations become more interesting as both actors of the relation are coming from very different contexts and environments. This creates greater tensions, greater challenges and more interesting experiences. Antagonism, as Claire Bishop describes it, is also for me essential in choosing a context for the realisation of a work of art. '[...] the presence of what is not me renders my identity precarious and vulnerable, and the threat that the other represents transforms my own sense of self into something questionable.'

But not only antagonism plays an important role in working in and from new contexts, but time does too. Time to build relationships that are respectful, durable, non-instrumental and profound. Only by taking the required time to develop these relations can one create the conditions within which the project can become a part of people's daily reality.

Time Conflict

The being ready of the project as an object is very visible to the outside world. A faulty engine on the mirrors is very visible to the press and public. However, a network with the neighbourhood that's not yet fully in place or "ready" is less visible. In a time conflict the technical and artistic aspects of the project could take priority over taking care of the relationships.

While working on 'There is the sun', the conflicts I experienced were not between social/environmental on the one hand and artistic values or goals on the other hand, where I had to protect the autonomy of the work against goals that were anything other than artistic. The conflict I experienced were time-related. The time it takes to build fair, respectful, and lasting relationships. The time to listen to and interact with the concerned public. The time to establish and maintain these relations could come in conflict with the time needed to realise, finish, and refine purely artistic and technical aspects of the production...

Descending From a Bird's-Eye to A Man's-eye View

An important part of 'There is the sun' was created on the design table. From the same bird's-eye view, Braem designed the hexagonal and herringbone-shaped buildings. As described, an equally important part of 'There is the sun' was realised from a "man's-eye view": through a dedicated and respectful interaction with a neighbourhood. From this design perspective I tried to create the proper conditions to embed the project in a real context.

Through the notion of time, and through a design perspective that is closer to the ground, I get myself and my practice involved in a real social context. Not to change this context, but to make art. From this perspective, there is no complete overview of a feasible world. As it was in Braem's bird's eye view where architecture was an instrument for making a better world. In this man's-eye view there are several sub-perspectives within which we work on interactions between different perspectives and worlds. Between artists, communities, neighbourhoods, residents... Interactions that can be challenging and instructive, boring or just neutral. From this perspective I create in and from real contexts, and I avoid charging myself with the uphill task of changing these contexts. I gamble on a better future. But first and foremost I remain an artist, in a respectful and caring relationship with the real contexts in which I work. Taking the time it takes. Seeking meaning, beauty and light.

Zero wastage footwear

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ABSTRACT

While sustainable design continues to gain popularity in both design and academic field, there has been very limited research focusing on sustainable footwear design and pattern development. In view of the seriousness of wastage problems found in footwear design and manufacturing process, this research examines several developed sustainable fashion design and pattern cutting methods, and subsequently develops and transforms into a 'zero-wastage footwear design' approach which optimises material usage and reduces production costs in cutting and stitching. To facilitate an open-design concept in sustainable footwear design, we collaborate with a group of shoes design practitioners, academia, as well as consumers in several studio-based workshops to testify the effectiveness and efficiency of existing shoes design methods in minimizing material wastage as well as achieving comfort and aesthetic goals. We conclude with a mixed method that utilises several large quadrilateral shape cut-pieces and joining them like a jigsaw puzzle to achieve zero wastage. The shoes together with the specimens are visually exhibited as artifacts to showcase the experimental design development process. This research project contributes to the area of sustainable design methods by introducing a 'zero wastage design approach' to refine footwear design and production process.

INTRODUCTION

In this zero wastage footwear collection, developed approaches of contemporary sustainable design used in fashion design namely zero wastage were examined. An exploratory study was being conducted to explore the possibilities to incorporate such design concepts or approaches into the field of footwear design. As a result, a collection of sustainable footwear design was able to be identified, namely zero wastage footwear.

Zero Wastage

Zero-waste fashion design approach refers to clothing that generate little or no textile waste during production (McQuillan and Rissanen, 2011). This approach achieved by eliminate waste in design and manufacture stages. Zero-wastage design through the pattern techniques, for examples, working within the space of the fabric width, 3D patterning, to create products (Gwilt and Rissanen, 2011).

In our footwear design, two methods fall under the zero-wastage approach. Method 1 is to minimise pattern pieces and create large quadrilateral shape pieces to reduce waste between each cut pieces, which is widely used in fashion design. Method 2 is to cut off large shoe pattern into serve pieces, and utilise all cut pieces within a quadrilateral shape without any wastage materials, like a jigsaw puzzle, to achieve zero wastage.

Method 1: Create Large Quadrilateral Shape Pattern

Figure 1 shown the first pattern drafted by 1st method. This pattern aimed to simplify the shape of the original flat shoes pattern, and fully utilise the materials to achieve zero-wastage. With the prototype of zero-wastage pattern I (figure 2), it shown that the shoe top was not flexible enough for walk or even fit in the feet.

Since then, Pattern I was then being modified by our research team to obtain the most optimised fitting in different zero waste fashion techniques. As figure 3 shown zero-wastage pattern II that with slit applied on the shoe top, which provide bigger opening for the feet to fit in. Figure 4 demonstrated the outcome of pattern II. The opening of the shoe top was larger than pattern I, and the fitting problem was solved.

Keywords
design solution, sustainable design, zero wastage

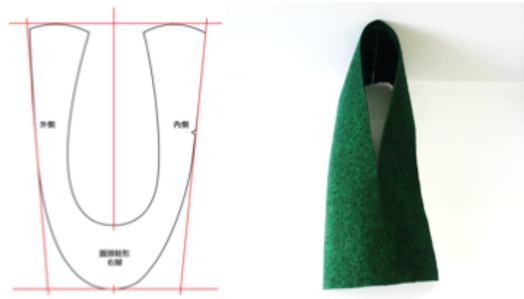


Figure 1 & 2. Method 1: pattern and prototype of pattern I

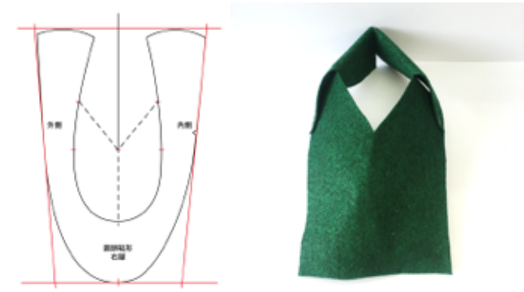


Figure 3 & 4. Method 1: pattern and prototype of pattern II

Method 2: Divide Shoe Pattern into Jigsaw Puzzle

According to footwear experts and manufacturers' advises from several interviews, they highlighted by their experience, the smaller pattern pieces, the higher rate of material utilisation can be achieved. Aimed to demonstrate how small cut pieces help to minimise the wastage of materials, a flat shoe pattern was then being divided into several sets of cut-pieces.

The Pattern design produced by Method 2, given more opportunity to reduce material wastage by matching the pattern pieces like jigsaw puzzle without any waste pieces between patterns.

Figure 5 and 6 shown the pattern and prototype of Method 2. With this pattern design, 0% wastage is achieved, a pair of size 36 flat shoe top only require a piece of 21cm x 30cm rectangular shape material, which is the measurement of international A4 size paper. In the pattern design the original one-piece flat shoe pattern was divided into 5 small pieces, included 2 pieces for making the toe box, and 2 pieces for lateral and medial side pieces; and 1 pattern piece for strengthen the structure of heel area.

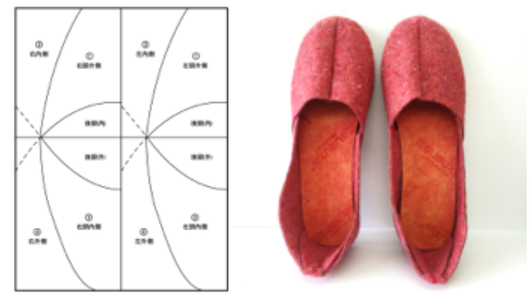


Figure 5 & 6. Method 2: pattern and prototype

Method 3: Mixed method

After a series of tests and specimens produced by method 1 and 2 with advises and suggestions from footwear experts and manufacturers to testify the results, 3rd method was developed to achieve zero-wastage in design stage of footwear. Method 3 is emerged from method 1 and method 2, which is a mixture of both methods' features, aimed to deconstruct the traditional shoe top pattern in limited cut pieces and material size.

The pattern design created with method 3 (figure 7 & 8), it minimised the number of pattern to 3 cut pieces within a quadrilateral shape base, and all sewing allowances for the making processes has been included in the pattern design. Method 3 design is achieved by the application of slits and the adjustment of curves in the flat shoe pattern. The slit on Method 3's pattern design reduced the center seam of toe box which appeared on Method 2's design (figure 8 & 9). This pattern design not only benefit a reduction of materials wastage, but also reduce the manufacturing cost, since it required less stitching and pattern-cutting during the production process.

With the combination of the pros from Method 1 and Method 2 of zero-wastage footwear pattern design, Method 3 became the basic style of our final zero-wastage footwear collection of this project, and as a base for further sustainable design research activities.

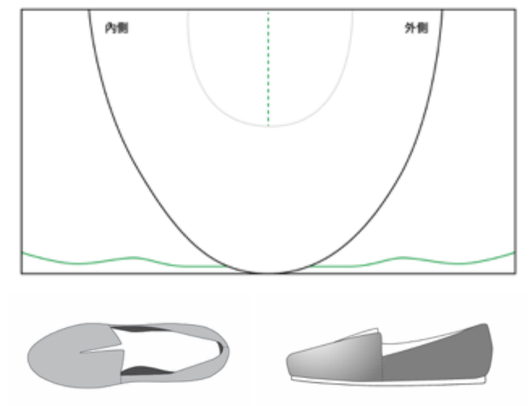


Figure 7 & 8. Method 3: Final outcome's Pattern and prototype

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Open Bio-hacking Fashion toward sustainable production line: studying on bio-material development and 3D forming

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ABSTRACT

By the application of biological materials in the process of dress-making, this practice-led research has been analysing the production line of the fashion industry and trying to propose sustainable solutions. Also the research aims to combine emerging biotechnology and sustainable fashion in order to establish the design process as an alternative design process to the polluting industry. As the research background, there is the need for sustainable fashion; since 2010s artists and designers started to investigate material innovation driven by the technologically discovered potential of synthetic biology and DIY bio-hacking. The creative fusion of emerging biotechnologies and design opened up the renewability of the conventional design domain. Recent practice-led research in fashion design looks at the relationship between ecological sustainability and biotechnology as a succeeding topic to cope with the issue concerning limited global resources.

As the methodology, the authors adopt two processes to make bio-garment. First, the experiment of DIY bio has been conducted for culturing ecological bio-material SCOBY(symbiotic colony of bacteria and yeast) that produces bacterial cellulose. The material has similar properties to leather. Second, designing the garment through 3D modeling has been tackled because we aim to make the bio-materials grow onto a 3D printed mold as ‘zero waste method’, which can eliminate textile waste at the design stage.

The research so far has revealed the possibilities of the 3D design process for bio-material SCOBY as sustainable material. However, several challenges remain. For examples, the study of waterproof of the materials and the development of the dyes by bacterias. The ultimate goal of the research is speculation on an alternative production line toward future sustainable fashion.

Keywords

fashion design, bio design, sustainable design

Research Background

With the help of exploration and research in the field of wearable technology particularly in the 2010s, the fusion between fashion and biotechnology is about to happen(Ginsberg, 2014). The most developed area of integration of biological processes is Material Science. In the research on sustainable materials, designers and engineers have begun to look at the metabolic processes of microorganisms as a way to synthesize natural composites. Sustainability has become a growing issue in the field of fashion design in the late 2000s and early 2010s. The commercial fashion industry highly relies on mass production and mass consumption, and the resulting accumulation of textile waste has become the root of many serious environmental problems. In the context of sustainability, this study aims to speculate an alternative sustainable form of fashion and invert the system of the current fashion industry (Fletcher, 2013).

Research Objectives

In order to actualize sustainable fashion, the production line of the fashion industry must be redesigned. Kate Fletcher, previous director of the Center for Sustainable Fashion, said that the field of sustainable fashion deals with 1) material, 2) process of production, 3) distribution, 4) use of garments, and 5) disposal (Fletcher, 2008). The current fashion industry consists of various stakeholders and complicated phases. Examples include fiber development, pattern design, sewing, fashion shows, selling, distribution, and media. Therefore, it is necessary for us to avoid focusing on only one field and to have comprehensive solutions for the entire fashion industry. Therefore, this practice-led research aims to speculate a suitable manufacturing process for a new bio-material and applies this method to designing garments in the perspective of sustainable fashion. There are three main research practices: material developing(Experiment 1) pattern cutting(Experiment 2) dyeing(Experiment 3) .

Practices

Experiment 1 : Incubation experiment for SCOBY

The authors set SCOBY (Symbiotic Colony of Bacteria and Yeast) as their object of study, conducted incubation experiments, recorded the process, and collected data.

Experiment 2 : 2.5 dimensional fashion pattern making

Based on the Experiment 1, the authors have been developing a suitable pattern cutting methodology to reduce textile waste and create shapes to fit a body by the use of transformable systems of SCOBY effectively.



Figure 1. Incubation processes

Experiment 3 : Living pigments

To create a comprehensive sustainable production line, it is necessary to develop a finishing process that includes dyeing in relation to the previous research. This is an experiment to develop dyes that uses bacteria with color-pigments.



Figure 2. The process of designing 2.5 dimensional fashion pattern

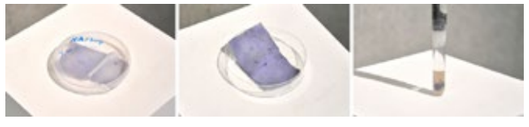


Figure 3. Deliverables of bacterial dyes

Conclusion

New innovations and developments in bio-fashion would be hindered in this closed situation. This is why the authors believe it is very important to make our knowledge and technologies available for everyone and encourage more designers and researchers to study about bio-fashion design. You can also consider this as a problem on “open design”. This whole new idea of bio-hacking fashion should not be a black box for designers to avoid leading any misunderstandings and users should not be afraid of using biotechnology. From this perspective, it has been very crucial for us to explore an alternative process of design, following the methodologies of “bio-hacking”.

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Five classical elements

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ABSTRACT

A series of artefacts exploring the classical elements of the universe, earth, sun, air, wood, and quintessence, challenge the emotional connection, awareness, sustainable design and material research approaches. The elements are historical, sociological, philosophical and essential matters. How can designing for the environment help to reconsider the value of these factors in our urban lives? This research stimulates scientific approaches, user experience and an object’s meaning. The artefacts are engaging, caring, poetic and playful. The process of development and production play an important part in harmonising the final aesthetic signature and challenging the virtuous craftsmanship process. Together with local scale and light industrial production with horizontal evolution, they are put into practice through the cradle-to-cradle principle, bio-mimicry and ecofriendly material experimentation. The results are multiple and critical, leading to a series of bio-diverse conceptual objects, organic and singular with their own character. The outcome invites audiences to re-consider their connection with nature, the lifecycle and alternative ecosystem scenarios for the future.

Keywords

drivers, material, experimentation

A series of artefacts exploring classical elements of the universe - Earth, Sun, Air, Wood, Quintessence – which challenge emotional connection, awareness, sustainable design process and research approaches.

Elements are historical, sociological, philosophical and essential matters. They represent essential primal drivers. How can Design for Environment help to reconsider the value of these factors in our urban lives ?

This research stimulates scientific approaches, user experience and the object’s meaning. The development and production process play an important part in harmonizing the aesthetic signature and challenge virtuous processes. Together with local scale to light industrial production and horizontal evolution, they put in practice cradle to cradle principles, biomimicry and eco-friendly material experimentation.

The results are both multiple and critical ; leading to a series of biodiverse conceptual objects, organic and singular. The artefacts are engaging, caring, poetic, playful and reversible. In parallel they disseminate a vegetal story. The outcome invites audiences to re-consider their connection with nature, lifecycle and alternative ecosystem scenarios for tomorrow.

The installation presents :

Eco-Pebble – Earth Conceptual pot-vase which aims to revalue the act of recycling in an urban context to create fertile soil.

Bigger Series - Air Magnifying greenhouse cloche rhyming the evolution of plants and playing with the air stream.

Bigger Series - Wood Conceptual vessel, Organic series based on seed metaphor and evolution.

Para Moon & Sun - Fire An urban way of using solar power technology by a lit sun-moon umbrella.

Peekaboo - Quintessence Post optimal concept-product on transmutation and after life.

Eco-Pebble - Earth

Eco-Pebble is an urban composter which aims to experience the process of making soil in order to create fertilizer cocktails in an attractive and playful way.

This holistic project is about challenging lifestyle scenario, relationship with beauty & sustainability and shifting behavior.

Recycling our biodegradable scrap is becoming primordial as it represents a third of our waste. The composting process represents a challenge in its entirety, positive in mind and yet still concretely negative, in actuality. 35% of our organic waste is burned in a non optimum way or dumped together in landfill sites which alter the Earth element. This provokes unnecessary gas related to the climate change.

Eco- is innovative in terms of process, use and synthesis. It could be assisted by an electrical function to make it convenient and easy to deal in daily life compared to others. After one month the fertilizing cocktail is ready to host seedlings. What could be envisioned for this product production are two options: one customer oriented as a hackable object made in bioplastic 3d printed and a low technology qualitative version made of clay or porcelain.

The object birth date and its symbolic name referring to the periodic table is inscribed under the object to emphasize the object narrative.

The French Agronomic Research Institute INRA is considering testing it to prove its viability.

Eco-Pebble 20*20*30 - Plinth presentation

Bigger Series – Wood

The origin of this project is an exploration of material characteristics, form, function and symbolic message as a seed metaphor. It is an extension and a complement of the Green house object, focusing on the base of the cloche.

As an element mainly listed in Chinese philosophy; wood is an essential environmental driver. Forests, eco-friendly regenerate and absorb pollution and in terms of properties, it is a warm, non-emissive material. Cork renews itself as long as the forest is sustainably harvested, suggesting the concept of slow design, emotional durable objects and biomimicry principles.

The assembly of the organic shaped glass explores unique solutions on each object. Cork allows the enclosure and maintains the glass without stress. In the same time the work acts as a plant pot through its breathability and waterproof quality. The cone can be used in both ways following the shape, and the needs of the plant.

Landscape pattern on one face; birth date of the object and its symbolic name referring to the periodic table is inscribed on the other face to emphasize the objects identity.

Bigger Serie 18*15*20 cm

Bigger Series - Air

A greenhouse cloche rhyming and protecting the evolution of plants.

This project looks to time and protective relationships through the observation of a seedling. It could suggest an hourglass rhymed by the plant growing. This project values biodiversity and uniqueness of a series through material experimentation and playing with the variability of the duplication or iterative process.

Air is vital and in the same time unnoticeable. By making it more visible and linking it directly to a vegetal life, the atmosphere becomes evident.

Different materials and effects are currently being tested: magnifying, translucent, transparent, recycled, photochromic, biodegradable. The cloche material could be made in glass or in bioplastic, for example acetate. In others word, it is a cloche which helps plant growth by creating a protective atmosphere and reducing or playing with the air stream. The glasshouse is in tune with the natural environment thanks to the gap. This allows the plant to strengthen.

The assembly of the objects explores different solutions. The cone can be used in both way following the shape, and the needs of the plant. The object is dismountable to ease recyclability and transport. The offcut is planned to be used as a prop. The object birth date and its symbolic name referring to the periodic table are inscribed under the object to emphasize the object attachment.

Bigger Serie 18*15*20 cm - Plinth presentation

PARA Moon & Sun - Fire

PARA eclipses the sun and illuminate nights, it is a lighted umbrella. Its purpose is to protect during the day and collect power thanks to its solar cells energy. Then at night it lights gently the evening and the nature surrounding. This project is about finding a use and vegetal scenario to integrate green technology in urban life.

Sun, associated to the fire, is one of the greatest resources. Green and smart technologies have been recently developed to use it. The constraint of the collection process is challenging in an urban context as it needs a minimum area to be effective.

The project works on a modular basis. Thus PARA Gliding is a hanging light which moves gently in the air. They could work outdoor or indoor depending where they catch the light. Following their wingspan and composition, Para fits big or small terraces and converse with vegetal surrounding. It is easily movable and foldable to improve its volume, ease its disassembly and transport. It is made with ecologic and recyclable material. Different mono materials and effects are in test to ease dismantling. It works with low and renewable energy : sun power + led.

The object birth date and its symbolic name referring to the periodic table is inscribed on the object to emphasize the object narrative.

Para Glide : 50/100*40/80*2 cm - Hanging point : ceiling / window roof

Peekaboo - Quintessence

Peekaboo is a post optimal object. Here the question is about our relation to product, the becoming of the object after its use and its potential transmutation. This critical design challenges assumptions about the object typologies in our environment.

The fifth element embodies the best essence of an object. It expresses another level of meaning, of materiality, of philosophy... In physics it covers an array of hypothesis like dark energy linked to the universe accelerating.

The non design and the reuse of existing objects, question our need for a product. And also the idea in nature nothing is created, nothing is lost, everything changes – A. Lavoisier-. Expressive. in terms of symbolic, Ironic Iron is used as a communicating device where its tracks become playful but also meaningful in terms of representing a footprint. The reflection is also about the freedom, domestication of the material and the power control of the object. Are they controlling us or are we controlling them? The interactivity is part of the reflection by the thematic of movement. So could we envisage a world where objects escape and deliver messages when touched.

Ironic Iron : 20*15*20cm - Plinth presentation

How can design education support designers in their visionary work towards sustainability?

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ABSTRACT

The objective of this workshop is to create a space for synthesis of and continued work to build on the paper sessions on sustainability, with the focus on design education. What roles can designers play in the vision towards sustainability? What is required of design curricula, pedagogies, educators, academic institutions, and wider partnerships to support students towards these new or modified roles? The workshop aims to both set an agenda for years to come and to create an ongoing “think and do-tank”. This interactive and action orientated workshop will be led by an interdisciplinary group from the Cumulus network and the Cumulus working group for Sustainability, representing European and Asian perspectives, as well as both theory and practice.
This will be a 3-hour long workshop with practical outcomes. Max: 30 participants.

The workshop is structured in three consecutive stages:

1) Synthesis of insights from paper sessions & shared examples of best practice.
2) New designer roles at the intersection of curriculum, traditional and emerging socio-cultural, economic and ecological systems.
3) Designing: prototypes for integrating relevant and applicable sustainability learning into the design curriculum and academic institutions.

Outcome:
Exhibit: A) Prototypes and narratives for learning for sustainability in the academic institutions and in our wider partnerships. B) Agenda proposal for “think and do-tank” for ongoing Cumulus conferences.

Keywords

sustainability, curriculum, design

Project Description

Context

The worlds’ nations have ratified the UN Sustainable Development Goals. Many universities have sustainability, in different terminology, in their vision and mission statements. Yet, in the design institution grappling with how to teach sustainability can be hard. Do we even know more than our students? Can we enter into the complexity and uncertainty that our world today entails? What happens, pragmatically, with courses, learning outcomes that have been close to our hearts when the demand for new knowledge and skills is pressing? How can we as design educators negotiate the frameworks of the academic institution, ‘usability’, students’ expectation of design and design education, and the need to take responsibility for meeting, and exceeding the Sustainable Development Goals?

Purpose

The purpose of this workshop is to create a space for sharing and building on Cumulus participants’ experiences and ideas about education for design and sustainability. The workshop will also try to help bring together insights from the paper sessions on sustainability, orienting them to design education. We will work concretely with the UN Sustainable Development Goals framework.

We ask:

How can design education be a safe space for exploration of designers’ roles in the vision towards sustainability? What is required of design curricula, pedagogies, educators, academic institutions, and wider partnerships to support genuine work with the UN Sustainable Development Goals?

Structure

The workshop is structured in three consecutive stages:

1) Mapping: synthesis of insights from paper sessions & shared examples of best practice, and orienting these to the UN Sustainable Development Goals framework. We invite all participants to bring best practice.
2) Envisioning: bold and imaginative scenarios for design educations in the context of the UN Sustainable Development Goals.
3) Designing: prototypes for specific courses, learning situations, methods, and tools working from the scenarios.

Organisers

This creative and action orientated workshop will be led by an interdisciplinary group from the Cumulus network and the Cumulus working group for Sustainability, representing European and Asian perspectives, as well as both theory and practice. We hope that the workshop can begin to set an agenda for years to come and to create an ongoing “think and do-tank” for how we can work with the UN Sustainable Development Goals framework.

Duration

This will be a 3-hour long workshop.

Abstract and Rationale

This is a co-create exploration of how design education can work with the Sustainable Development Goals framework set by the UN and ratified by all countries in 2015. Together we will share best practice, develop bold scenarios, and design concrete prototypes for courses/learning situations/methods and tools.

Expected Number of Participants and Target Audience

Max: 30 participants. We are hoping for a diverse group of participants, of different generations, nationalities and design disciplines. You may have a long experience of teaching design for sustainability or be a curious newcomer. Academics, professionals and students are warmly welcomed.

Short Biography of Organisers

Susan Evans’s vision is to create healthier and more resilient communities and environments. Susan works on initiatives to envision future scenario eco-systems and implement techno, socio, environmental innovation towards sustainability. Susan is adjunct lecturer in Design and innovation at Tongji University, consultant and social entrepreneur.

Mathilda Tham’s work sits in an activist, creative space between design, futures studies and sustainability. Her research uses collaborative, transdisciplinary workshops to intervene paradigmatically into socio-material relationships. She is professor in design, Linnaeus University, Sweden and metadesign researcher, Goldsmiths, University of London

Sara Hyltén-Cavallius’s core concern is to make the world a better place for living creatures, through social and sustainable design and education. Sara has a background as an architect and is now the head of Department of Design + Change, Linnaeus University Sweden. All our learning through education and research is dedicated to sustainability.

Preferred venue and equipment required

For this workshop we need a space that can accommodate 5 simultaneous groups of 6 persons. The space needs to be flexible, so that we can move chairs and tables and use the floor. We need a wall to stick big sheets of paper on. We will need plenty of flipchart paper, many markers of many colours.

The future of urban food

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ABSTRACT

The purpose of this workshop is to build on the discussion of the "future of urban food" with the aim to share, both globally and locally at Cumulus host city, action orientated reflections to aid decision-making and developments towards better food systems. Further, to collaboratively build-on the current knowledge of global participants enabling farther understanding, critique and reflections on design research in the field of food within specific cultures and environments. How can designers, design research and education contribute to the future of feeding our urban environments sustainably?

The workshop will be created and conducted by an East, West mix of design researchers and instructors from the Cumulus and Desis network – design for social innovation and sustainability, who are active in this field in both theory and practice.

The intent is to reframe the techno-socio-environmental challenges and to design a trans-disciplinary dialogue, among global inter-disciplinary Cumulus members and Desis "Food cluster" (http://desis-foodcluster.org/) participants, along with input from Hong Kong's food system stakeholders.
In doing so the intention is to build on a resource of knowledge that can aid globally the Cumulus schools in their development on the topic of "urban food sustainability" within the design discipline: its systems, the artifacts, spaces and people relationships.

This will be a 3-hour workshop. Maximum 30 participants
Outcome: scalable workshop for on-going Cumulus conferences
Exhibit: narratives to aid in urban food decision making towards improved and sustainable food systems.

Keywords

sustainability, food, urban

Project Description

Context

Given the threats and challenges to the human food supply, the growing issues with food security, accompanied with the sustainable development goals, every major global city has to ask the question of how to produce its food, minimise its waste and optimise the efficiency of their food systems to best serve its citizens within the planetary boundaries and so move towards sustainability (social, environmental and economical).

Purpose

The purpose of this workshop is to build on the discussion of the "future of urban food" with the aim to share, both globally and locally at Cumulus host city, action orientated reflections to aid decision-making and developments towards sustainability and better informed urban food systems. Further, to collaboratively build-on the current knowledge of global participants and their paper sessions to enable farther understanding, critique and reflections on design research in the field of urban food systems and futures within specific cultures and environments.

In doing so the intention is to build on a resource of knowledge that can aid globally the Cumulus schools in their development on the topic of "urban food sustainability" within the design discipline: its systems, the artifacts, spaces and people relationships.

Ongoing we hope that this Workshop structure and outcome can be further scaled for continuing Cumulus conferences. Such that each conference will build on a knowledge database and knowledge exchange across countries, cities and design colleges.

Our Question

How can designers, design research and education contribute to the future of feeding our urban environments sustainably? And more specifically we might engage in topics where society, technology and environment meet to help shape our present and our future communities such that we engage in dialogue that explores:

What as designers can we do to support a reconnection with food and what are the benefits of these reconnections? How does urban food production play a role in better urban food systems?

Structure

The workshop is composed of four interactive sessions:

1) Knowledge Sharing: Synthesis of learning and current work by practitioners and from paper sessions
2) Reframe: Through a multi-disciplinary dialogue the intent is to collaboratively reframe the techno-socio-environmental urban food challenges towards sustainability using design tools
3) Future scenarios: to explore potential new systems, benefits and pitfalls of various types of initiatives that may address one or more challenges
4) Design Contribution: narratives of the contribution professional designers can make to the move towards sustainable urban food systems emphasizing critical issues and opportunities.

Organisers

The workshop will be created and conducted by an East, West mix of design researchers and educators from the Cumulus and Desis network (Design for Social Innovation and sustainability), who are active in this field in both theory and practice.

Duration

This will be a 3-hour workshop.

Expected Number of Participants and Target Audience

Maximum 30 participants. The workshop is open to all participants interested in the development of innovative and action orientated, techno-social-environmental urban systems, from interested beginners to experienced food researchers and educators plus global inter-disciplinary Cumulus members and Desis "Food cluster" (http://desis-foodcluster.org/) participants, along with input from Hong Kong's food system stakeholders.

Short Biography of Organisers

Susan Evans

Vision and practice is to create healthier and more resilient business, communities and environments. Susan works on initiatives to envision future scenario eco-systems and implement techno, socio, environmental innovation projects towards sustainability. Susan is adjunct lecturer in Design and Innovation at Tongji University, consultant to global businesses and social entrepreneur.

Anna Meroni

Architect and PhD in Design, she is Associate Professor of Design in the Department of Design at the Politecnico di Milano. Her research focus is on service and strategic design for sustainability to foster social innovation and local development. While serving as the international coordinator of the DESIS-Design for Social Innovation and Sustainability Network and of the POLIMI-DESIS Lab, she is the head of the master's program in Product Service System Design and on the board of the PhD program in Design. Anna is coordinator of research projects and conferences, author of several publications, and guest lecturer in international universities.

Davide Fassi

Architect, Phd, Associate professor of Design in the Department of Design at the Politecnico di Milano and Tongji University. Member of the international committee at DESIS Network (Design for Social innovation and Sustainability). His research focuses on community centered design in the spatial and service realm. He published "Temporary Urban Solutions" (2012) and developed "Coltivando, the convivial garden at the Politecnico di Milano" (2012).

Preferred venue and equipment required

Small group development requires a minimum of 7 tables, 35 chairs, projector with lap top connection leads, ideally walls/glass/white boards for drawing on, coloured white board and paper pens, plus flip chart paper to be distributed among groups and 2 flip chart stands. Recording: Audio and photographic. Exhibit space to display narratives.

Open Design For

ETHNOGRAPHY

Ethnographic research is inherently diverse: The approaches are subjective, the knowledge very often cannot be generalised, because it is particular and singular – and precisely that is why it can be an inspiring if transferred to an open design process. According to this, the topics of the submitted and also of the presented paper for the Ethnography Track were highly diverse – in topics as well as in methodological approaches: There were presentations about cultural transformation, material culture in prisons and other closed institutions, child-computer-interaction, Chinese creativity, and collective cultural memory. As methodological approaches Netnography, field observation with sketching, collaborative auto-ethnography, and different ways of participatory research were presented, reflected and discussed. This diversity shows: There is no ontological truth or objectivity in ethnography, but various paths are abound. Designers doing ethnographic research search for blind spots, attempt to pluralise perspectives, and sensitise for certain social fields. Carrying out ethnographic work in an open design process means to seek for an alienated view on the everyday-life perspective and to develop a consciousness of contingency.

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Crafting ethnographic experiences: ways of knowing Facebook - Influences of a practice-based approach on research on everyday digital life

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ABSTRACT

This paper presents reflections on ethnographic research, which was undertaken in 2010 exploring the link between Facebook and the use of it by undergraduate students studying in Higher Education at one UK university. The focus of this paper is interrogating the use of practice-based methods within an ethnographic methodology. I present reflections on using design thinking, craft skills and card modeling to supported analyses of participants social interactions on the social media site, Facebook, in coming to know the digital space. Jungnickel and Hjorth (2014, 136) propose that ethnography and practice-based art research have a long 'tacit history' and that 'the process of making and thinking through art is an integral part of doing research'. Using the data collected during the ethnography from my time spent in the field. I take a reflexive view of my translation of the data into material form and discuss the analytical process I went through in coming to know Facebook as 'narrative interpretation' and 'thinking with my hands'.

Keywords
digital, process, materiality

INTRODUCTION

This paper discusses a research project, which explored the everyday use of the social network site (SNS) Facebook by first-year undergraduate students in their transition to university. The focus of this paper is interrogating the use of practice-based methods within an ethnographic methodology. I present reflections on using design thinking, craft skills and card modeling to supported analyses of participants social interactions on the social media site, Facebook. I take a reflexive approach explore this research methodology and the impact this had on coming to know my participants Facebook practices and the significance of the model making to the issue being studied. This paper presents retrospective theorising about tacit responses and ways of working.

The data discussed in this paper is taken from an empirical study undertaken in 2010 on how first-year undergraduate students in the UK use Facebook (Stirling, 2014). The study used ethnographic methods to observe student Facebook use, and then looked at whether Facebook helped or hindered the students' transition into university life. It explored the cultural practices of the students' use of this social network site in the context of their university experience. The students, their habits and their rituals were of interest, along with their interplay with technology. The findings of the study showed Facebook was both a pathway and a destination, one that the students used on a daily basis as part of their everyday lives. This site was (and still is) ubiquitous in a great many of the lives of young (18-21 year old) undergraduate students in the UK (CLEX, 2009; Ipsos MORI, 2008), with research findings (at the time of the study) showing that 91% of undergraduate students describe themselves as using SNS 'regularly' or 'sometimes' (Ipsos MORI, 2008, 10). Research in this area suggests that Facebook is a key tool used for social support and supporting academic study (Madge et al., 2009; Selwyn, 2009). It is acknowledged that students do use other SNS and that not all students use Facebook, but this particular site is embedded in everyday student life, and it was the nature of this 'embeddedness' that was the focus of the research.

Context

A Designerly Approach to Investigating Social Media

There has been an intrinsic link between the social network site Facebook and young undergraduate students since the website's inception by students' studying at Harvard University in 2003. Social network sites are among the most popular everyday life activity destinations on the web and Facebook is the most popular of these sites (other examples are Twitter, LinkedIn, Tumblr) with currently 1.19 billion monthly active users worldwide (Protalinski, 2013), The study, which is the focus of this paper, was of first-year undergraduate students' uses of Facebook to negotiate their transition into their first year at a UK university. I did this through a mixed method two-phase approach of large-scale questionnaires (n=692) and a longitudinal (year-long) connective ethnography (n=6), which took place across Facebook and the university campus.

Design thinking influenced my research approach. My background previous to becoming a doctoral researcher was in product and interior design practice and lecturing. I have been tacitly influenced by the transdisciplinary approach, which is important in design thinking and design research (Cross, 2011, Trowler, 2012). Designers research and draw on a range of expertise in this pursuit of discovery and in a similar manner I explored undergraduate Facebook use through drawing upon the plurality of method that a practice-based process affords (Lawson, 2006) within an ethnographic methodology. Denzin and Lincoln (2005) propose the use of a range of methods and the plurality of methods as 'bricolage' (p.159), using a range of tactics that are linked to the context being studied and appropriate to the research question. Law (2004) is in support of the unconventional and suggests the concept of mess as a theoretical and methodological focus in social science research and that to understand the messiness and complexity of social life, researchers should not stick to traditional methodological approaches and should use 'methods unusual to or unknown in social science' (p.2). In this manner I turned towards my existing and tacit skill set to understand and make sense of the data I collected through my ethnographic experiences. For me design thinking and architectural model making process were used as ways of knowing social media use.

Digital Ethnography and Anthropology

Facebook in Everyday Life

Observing the everyday life of my participants in their natural settings of Facebook and the university environment was the main focus of my ethnographic approach. In researching both the digital and the physical environments of the undergraduate students, I took the view that there is nothing particularly new or special in researching 'Facebook' as a digital environment but that it was the cultural practices within it, which were the focus of my ethnographic observation. As boyd states, (2008, p.31) 'Internet ethnography is not about the technology - it is about the people, their practices and the cultures they form'. The people, their habits and rituals are what interested me, along with their interplay with technology. The Internet is a pathway to connections with other people or information and I see Facebook as a pathway and a destination, one that the students use on a daily basis as part of their everyday lives. The Facebook project took a multi-sited connective ethnographic approach to researching both the digital and the physical environments of the undergraduate students. This built upon a previous study that took a solely digital approach to studying Facebook use (Stirling, 2009), which found that to view the digital only was missing many of the social practices which included face-to-face interactions. When studying something that can be transient and fluid, across the digital and the physical, the concept of a field site becomes fuzzy and less rigid. The importance of being embedded in the practices of the participants in order to have an insider view was paramount in understanding this. One of the findings from this study was that students used Facebook Group Chat within lectures. Being an insider Group member was key to viewing these practices and digital methods facilitated this.

Thinking Through Fieldwork (Okely, 1994)

In this study I was significantly influenced by anthropological approaches to both my data collection, through undertaking the ethnography, and also in my analysis of the rich dataset. Okely (1994, 32) proposes that the interpretation of this material is a 'continuing and creative experience' and that there are 'serendipitous connections to be made'. These interpretations and connections are made when I move between field, modeling, writing and analysis, data and experiences, myself and my FbF. The development of the analytical framework of the study time, came from this process of self-immersing in the data. I found this to be an experience that was grounded in my own lived experiences of Facebook use. Serendipitous experiences have littered this research project, particularly at the intersection between architectural and new media theories – these led me down a different path or a different way of seeing the data.

Architectural Models as a Research Method

Scale architectural models are something I have made and used in my practice, as an interior designer, many times. I am interested in the way people inhabit spaces, both digital spaces and physical spaces. I believe the architectural model is important to the design process as it helps the designer visualise the design scheme and can often help the client understand the spatial layout more easily than reading 2D CAD plans. More often than not in current interior design practice the card model is replaced by a 3D CAD rendered perspective view or walkthrough created on 3DS MAX, for example. Analogue models are still produced and I believe the materiality of the architectural model offers us more in the research process than a computer render can. Smith (2004) suggests the importance of architectural scale models through history, as a medium, a message and a maquette. They are used in a variety of ways; 'a thinking and defining mechanism for understanding and demonstrating' (p.3). Often the model is used to explain the design process and is an artifact as an elicitation tool. Smith (2004, 63) also proposes that architectural models can be used for defining a culture, something that 'reflects the manner of today'. Degen et al (2015) discuss how computer generated images are used to evoke the atmosphere of a new building or city through materialising the place. In this situation I am interested in our current cultural obsession with digital technologies and pose that to use an analogue process to interrogate the digital we can trouble, what could be taken for granted, in investigating in a solely digital manner. Architectural model making fits into the discourse on 'practice-led' or 'practice-based' research. Jungnickel and Hjorth (2014, 136) propose that ethnography and practice-based art research have a long 'tacit history' and that 'the process of making and thinking through art is an integral part of doing research' (ibid). There are methodological entanglements when working across social science and prace-based design led research approaches. Traditional and non traditional modes of making, presenting and transmitting knowledge (Jugnickel and Hjorth, 2014) are the focus of this paper. Crafting card models could be seen as an inventive method (Lury and Wakeford, 2012). Lury and Wakeford (2012, 3) suggest that using these methods cannot be separated from the 'research problems at hand'.

Reflexive Approach

Ways of knowing through practice-based methods and specifically, ways of knowing Facebook are the underpinning themes of this paper. How we come to know the social world and the lives of our participants are what we do as ethnographers. How I analyse and then account for my experiences and my impact on the lives of others is by being reflexive. Cunliffe (2003, 985) suggests, that to be reflexive 'we need to go further than questioning the truth claims of others, to question how we as researchers (and practitioners) also make truth claims and construct meaning'. Reflexivity is a central part of any research involving interactions with participants. Research is not value free and to be reflexive is to be aware of your analytical approach to the study and how this may influence your behaviour in the field and to acknowledge this throughout, particularly when representing the experiences of the participants and yourself (Clifford, 1986; Greenbank, 2003). The aim is to be authentic within and about the culture being studied and also to be authentic and transparent about the data collected and to interrogate the methods of analysis. Taking a reflexive stance within the research project, has an understanding that research practices are part of the wider world being studied (Hammersley and Atkinson, 2007). The case, which is the focus of this paper – I made sense of Facebook practices through my own use of Facebook, both personally and as a research tool. To support my reflexive approach I found it helpful to record 'critical incidences', which I found to be important at various intervals throughout the study. This approach opened up space for me to critically question the situated nature of the knowledge I produced (Cunliffe, 2003) and to deal with the 'messy realities' (Laws (2004) of social research.

I recorded 'critical incidences' or moments of interest on Facebook through taking a screen shot of the Facebook page I was on. The concept of 'critical incidences' relates to the work of David Tripp (1998) and the process of reflexivity. Through this process, the researcher not only develops understandings about the data, but also examines the ways in which these developing understandings influence the researcher. A 'critical incident' defines the point at which these understandings come together and a new understanding is created, which influences the research project and researcher, thus effecting change in some way. To come to this level of deeper understanding, my critical incidence screenshots were reviewed on a monthly basis and reflexive field notes were written alongside. By using this notion of critical incidences I was able to acknowledge my key moments of understanding. These then formed a major part of my analysis and decisions about which key pieces of data made it into each of my student narratives. The card model was produced as a result of the amalgamation of these critical incidences' to support me to construct meaning from them.

Going forward this paper takes a critical reflexive approach to interrogate the influence of making the card model on the research project – exploring the data it produced and how this supported my analysis; the concept generation and the forms I produced within the model and how these translated my field experiences into an architectural space and how reflecting on these impacted on the findings of the study.

Data

As a result of the year-log ethnography, the data collected during my time spent in the field were: fieldnotes, scratch notes, critical incidence screen shots, interview transcripts, photographs and videos (a selection shown see fig. 1). These were all part of the bricolage that formed the basis for my modelmaking practice.



Figure 1. Field data – messy realities of social research

Process - Model Making Forms of Facebook Architecture

This section details the process of architectural model making as a research method using my auto-ethnographic model (fig.2), which I produced mid-study, as an example. The model is entitled 'A Site of Possibility: Facebook an Auto-Ethnography. An Architectural Metaphor', the model is part art-work and part analytical sketching. The model was produced to exhibit at The Centre for the Study of New Literacies 2010 Conference, University of Sheffield, UK - Materialising Research.



Figure 2. A Site of Possibility: Facebook an Auto-Ethnography. An Architectural Metaphor. Scale: NTS

The next section talks in detail about the making -process of creating materiality from, and of, my ethnographic data. I used my experiences (in the field) and visualised my ethnographic data by re-presenting it to make a card architectural model of my Facebook Profile. In this manner integrating experiential knowledge and knowing into architectural design concepts.

The forms within the model are created to represent the social practices, which took place within the differing sections of my Facebook Profile. These I specified for the model were; Wall, Newsfeed and Chat. These are now described in three ways: Firstly, a screenshot of the element of my Facebook, secondly, a written description of the social practices which took place and finally a photograph of the corresponding area on the architectural model. Through each description and analysis I reflect upon how I arrived at the specific forms to model and what I learnt through the process of modeling and my reflections based on the models I produced.

Wall, is open and yet closed from the Newsfeed. The curved Wall on the model (see fig.3) has four staggered steps running across and up it and these represent the layers of conversation which took place on my Facebook Wall (fig.4) The layered nature of the steps illustrates the manner in which the differing conversations may be viewed by other Facebook Friends – some conversations can be observed, some can be interacted with and others cannot be seen at all. Some of the conversations are open for others to see and some are more private (see fig.3). There is a linked walkway to link some parts of the Wall to the Newsfeed, which is the main central structure of the model. This represents the backwards and forwards relationship between posting on my Wall and it appearing on my Newsfeed.

Newsfeed, is the main imposing cube within the model (see fig.2). It has two voids running through its centre (see fig.7), the larger of the two represents the private and personal News, which featured on my Wall, and the smaller represents the more public News from the Pages and Groups, which I follow (see fig. 6). The bridge between the Newsfeed and the Wall (see fig. 5), representing the Wall/Newsfeed interlink is intentionally narrow to echo the closeness between the two places within my Profile.

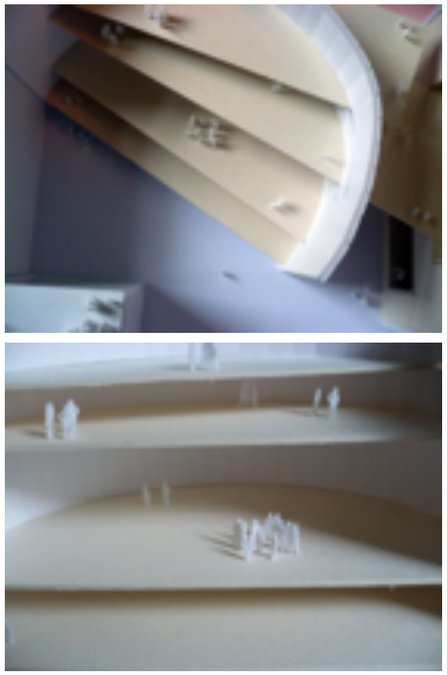


Figure 3. My Wall Architectural Model



Figure 4. My Facebook Wall 2010

Chat, is a private space between two people, one of whom is me. In the model only three Chats are represented (see fig. 8) as, in 2010 in my Facebook use I rarely chatted to more than three people at a time on Chat (see fig.9). The sloping sides represent that I am able to see the other Friends I chat to but that they cannot see each other. The Chat section is high above the rest of the model (see fig. 2) as Chat takes place as a layer over the top of the rest of the Facebook practices.

These artefacts were created by drawing upon practice based skills and approaches I learnt prior to training as a researcher. These skills were tacit in my ethnographic research approach to data analysis, which I discuss in the following section.



Figure 5. My Newsfeed Architectural Model (Wall in the foreground) 2010



Figure 6. My Facebook Newsfeed 2010



Figure 7. My Newsfeed, internal view 2010

Discussion

Narrative Interpretation

A narrative tells a story, it talks of the person, the object or the space and their experiences. In the Facebook study I used a narrative approach to structure my analysis of the ethnography by creating interpretive stories for each participant (McCormack, 2004). These stories were underpinned by the analysis, which took place when creating the card model. In my creative interpretation of the field dataset into an architectural model I was influenced by practice-based designer/researchers in interior design Danko & Meneely (2006), who draw on narrative methodologies to understand human interactions and the interrelated nature of peoples' stories and the influence these can have on the design process when designing new spatial experiences. They suggest that:

"Narrative, like design, is context dependent. Both are a creative outgrowth of the details and situational events that characterise a particular time and place. Narrative, like design, is socially entwined, focusing on the potential points of tension related to various human activities while attempting to deepen our understanding of human nature". (p.12)



Figure 8. My Chat Architectural Model 2010

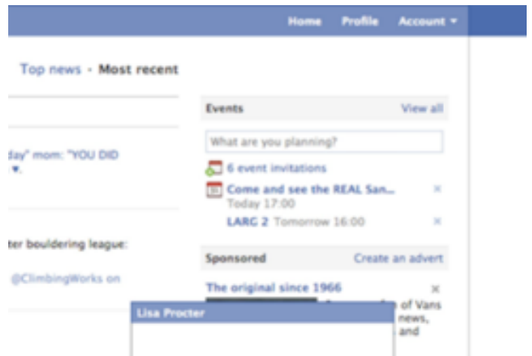


Figure 9. My Facebook Chat 2010

The social context of each of the Facebook spaces and places I described and created were intertwined with the architectural programme and layout of the card model. Interpreting these gave me an insight into how the environment of Facebook is inhabited and supported my creation of the narratives of my students' participant lives, which formed the main part of the presentation of data and study findings.

The making of the model was a space-time for me to immerse myself in the experience of using Facebook; to interpret the social interactions of my Facebook Friends. The process of crafting, gave me space to be away from (and yet inhabit) the field. The process of making the model influenced the study findings in a number of ways - making the model, presenting it at the conference and sharing the process with others, helped me understand the importance of the model making as an analytical tool. By playing with the social narratives of Facebook and recreating the

everyday interactions and rituals within the card model, I came to an understanding that Facebook is social and inhabited - a digital space as well as a place. This was a key moment in knowledge creation within the study. From this I created a written monologue, 'An Architecture of Facebook' which details the different spaces and places of Facebook and describes the social interactions and practices that take place within (see Stirling, 2014).

Thinking Through My Hands

Although not a traditional approach in the social sciences the notion of visualising the ethnographic field data as an architectural model appealed to the interior designer in me – drawing on my 'tools of the trade' (Jungnickel and Hjorth, 2014, 137). The process of making 'A site of possibility', the process of knowing Facebook, was hands on. The process of crafting, choosing the type of card, exploring its property – will the card be straight and strong or will it curve and bend? How does that property relate to the social practice, which took place in that particular place within Facebook? Using a knife to make a cut, to resize The Wall, my hands were helping me interpret the material nature of an imagined Facebook spatial narrative. I was thinking and analysing through my making skills. All of the decisions I made impacted on the way knowledge was produced. In my practice there was a symbiotic relationship between the experiential knowledge and making practice (ethnography and modelling). Jungnickel and Hjorth, (2014) propose that ethnography involves translation from the fieldwork to the reader as art involves translation from the studio to the gallery. I translated my ethnographic knowledge and experiences and represent these as a three-dimensional card model to explore the notion of experiencing digital space. The purpose of this was to translate the 'mess' of data from the fieldwork to the reader. To support this translation, the model was an interface (Degen et al., 2015) to realise my ethnographic experience.

These different data sets offered a multi-dimensional view of Facebook use. I propose that designers can imagine and (re)present the social worlds of their participants. By crafting three-dimensional architectural models these could be used as talking points to develop discussion with participants and discuss behaviours and experiences.

Conclusion

The everyday life practices of Facebook users are nuanced and varied. Undertaking an ethnography of my FBF gave me insights into some of their practices within the digital places of Facebook. Taking these digital ethnographic experiences and translating them, through card modelling into a three dimensional architectural space offered me a different way to immersive myself in the data and experiences. This step for me was an analytical tool – taking the digital, two-dimensional data, organising it, as I would for a building programme or schedule of accommodation. I then translated and materialised the data into a design concept model. The very nature of the participatory observation within ethnographic research is extremely personal and immersive. The model was an interface for me to analyse these experiences, communicate them in an alternative format that, subsequently enabled me to understand and make meaning from the spaces and places I created in card. In this paper I have taken a reflexive view by opening up my personal practice and interrogating the process of representing my experiences and analyses through card modeling. The methodological entanglements my positionality tacitly offered me of 'designerly thinking' and 'being ethnographic' were surfaced. The usefulness of crafting the digital spaces and places of Facebook offers a different way of knowing Facebook practices and the architectural forms 'speak back to' (Pink, 2014) the development of ethnographic theory in a different, material way of knowing.

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Self-constructed representations: design research in participatory situations

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ABSTRACT

This paper proposes that the blurred line between designer and researcher can have a positive effect on design processes. The aims of the paper are firstly, to show how design ethnography is an emerging field of design practice in its own right, and secondly, to give some examples of how open ethnographic methods have been used in public-facing field research. Finally, to propose some recommendations related to the design of open design-ethnographic instruments and activities.

Design ethnography integrates two distinct understandings of ethnography. The first is observational, designers present people with designed objects and observe how they interact with them (Houde and Hill, 1997). The second is shaping, designers give participants unfinished prototypes or sketches and invite participants to modify them (Baskinger, 2010). Designerly ethnography involves methods more familiar to designers than to ethnographers, and may be directed towards more general categories of inquiry than product development. This idea draws on Ingold's (2013) concept of correspondence with materials as a way of awakening the senses to experience.

This paper presents findings from three case studies related to the externalisation of digital experiences. The case studies are positioned as participatory design research involving the creation of self-constructed formative representations. The instruments and methods described include drawing, diagrammatic modelling and physical making. These are seen as externalising instruments whose purpose is to illuminate how people think about their own digital experiences. Findings show that materials have a profound effect on how externalising instruments work, and that a balance between complexity and accessibility is important.

Keywords

design research, design ethnography, research instruments

INTRODUCTION

In the following section I will outline the various attitudes design has taken towards ethnography, and position this paper, and my own research, relative to them. Designers have traditionally deployed ethnographic-style methods including observation, photography, video and interviewing to find out about the people for whom they are designing. Often, these methods have been used in controlled or semi-controlled settings, such as an organised workshop or user testing set up. I term these ethnographic-style methods because they do not feature many of the characteristics of ethnography as practised in anthropology, such as long-term engagement with a specific group pf people, or an emphasis on field work.

Design ethnography has worked in three main ways. Firstly, in methodological sympathy with anthropology, designers observe people using objects and systems they have designed. The observational approach focuses on the iterative development of products. This involves presenting people previously identified as potential users of a design product (physical or virtual) with an early version of that product, usually in the form of a prototype. Design prototypes can take many forms from cardboard architectural models, to diagrammatic representations of software products and can also be presented at different levels of fidelity (Houde and Hill, 1997) in order to fulfil different requirements of the design process. The prototype is then developed in response to user feedback and re-presented to the user group repeatedly, over time. This version of design ethnography demonstrates the indivisible relationship between people and design outputs - the purpose of the ethnographic work is productive - it is intended to bring about perfected products.

The second direction for design ethnography has been more active and participative. Instead of designers producing ever more faithful versions of their ideas to ask people about, they actively involve people in the design process. This means designing activities and settings conducive to participation, and making choices about what materials to use, how they should be combined, and which people to include. Participative design is ethnographic to the extent that it involves people, and open to the extent that outcomes are rarely predictable. Like observational design ethnography, it is centred around the generation of new forms in partnership, usually guided and facilitated by designers. The extra dimensions of ethical and political conduct when involving participants directly in the design process have been of particular concern to designers working in this way. A preoccupation with context, and the influence it may bring to bear on design activity,

has led to increased awareness of the spaces - moral, political and physical - in which designers operate. Litts and Searle (2015) call this being 'culturally situated and context dependent'.

The third direction for design ethnography has been harder to pin down but is perhaps exemplified by Moore's (1982) research eliciting reactions to the aged while disguised as an elderly woman. This strand of design ethnography could be termed provocative, or speculative, or more broadly - generative of insight rather than products. It involves designers using their creative and experimental skills to design elicitation methods, to produce research artefacts, or to develop design-oriented ways of finding things out about people - what is often termed designerly ethnography. Dib (2010) suggests that in this context 'the promise of the prototype is… that it breaks free of its intended function while fostering a conjectural quality'. That conjectural quality is associated with inquiry into 'how designed objects can produce new perspectives on socio-material interactions' (Lenskjold, 2014). Lenskjold connects this approach to the artefact-centred use of prototypes in design research by arguing for prototypes that lack 'a specific purpose and a precise criterion of evaluation'. In the next section I will outline the basis of a theoretical background for this approach with reference to research in anthropology and design.

Background

Ingold (2013) argues that the distinction between ethnography and anthropology is one of intention. Ethnography, he says, is concerned with documentation and description, it is generative of data from which ethnographers attempt to generalise about social conditions or about how social groups live in the world. It can involve artefacts and objects, creative activities and prototypes, among other methods. In contrast, anthropology for Ingold has 'speculative ambition' (2013: 4), it attempts to 'join with people in their speculations about what life might or could be like' (italics in original). It is not dedicated to data gathering, nor to transforming observations into data for subsequent analysis.

This definition evokes the role of designerly inquiry to the extent that Ingold places great importance on making things as a central element of anthropological work, and on the open and inquisitive nature of anthropological research. By involving themselves in making physical artefacts, anthropologists inhabit a way of 'knowing from the inside' (2013: 5), which Ingold contrasts to the orthodox model of academic knowledge production. While I do not intend to position the disciplines of anthropology and ethnography as distinct from each other in quite the same way as Ingold does, it is relevant to this paper that there is an echo of Dib's 'conjectural quality' in his definition of the openness possibilities in anthropological encounters. Similarly, the idea of knowing about things by making them, or being involved in their physical production, is a very familiar one to designers.

Cross (2006) connects to this last idea by arguing that there is a 'designerly' way of knowing things, making things, thinking about problems, and developing new forms. His analysis is limited to design education and a discussion of what designers do, but there are some general principles about how designers design that are relevant to my research. Cross mentions design process and design products as the twin strands of designerly knowing. I will focus here on design products. Cross maintains that objects 'are a form of knowledge about how to satisfy certain requirements' and 'how to perform certain tasks' (2006: 9). In line with Ingold, I expand this somewhat functionalist definition to include the possibility that objects are also a form of knowledge with which to inquire about human life, to bring about improved conditions, and to imagine alternative realities. One important effect of the attention designers pay to objects (digital or physical) is that design activity involves being what Cross calls 'immersed in material culture' (2006: 9). Objects are made of materials, designers manipulate materials into various configurations. In Cross's analysis designers are also fluent in the language of their respective media, 'and draw upon it as the primary source of their thinking' (Ibid). Designers are profoundly involved with materials - what Ingold calls 'correspondence', and what Sennett calls 'engaged material consciousness' - they are adept at reading the meaning of existing objects and encoding those meanings into new forms. Like Dib, Cross goes further, quoting Douglas and Isherwood (1979) in urging people to 'try (instead) the idea that commodities are good for thinking; treat them as a nonverbal medium for the human relative faculty' (1979: 62). This represents an opening of what objects can do, and suggests their usefulness in what we may call an open designerly ethnography. I would like to relate this point firstly to participative design research, and secondly to the role of instruments in design research.

The practice of co-creation, participative or participatory design research as defined by Sanders and Stappers (2008) includes some important points for this paper. These include; the role of the design researcher, the intentions of designs, and the artefacts used in co-creation settings. Starting with the first, it follows that if the design process is opened up to participants in group situations the role and function of the design researcher will change. Sanders and Stappers call this a move 'from translation to facilitator' (2008: 11). They also make the important point that the researcher may also be a designer, and may be working with materials whilst, as Cross has it, drawing on them 'as a primary source of their thinking' (Cross, 2006: 9). The twin role of designer and researcher is here conflated into a single person, working with others to generate new forms in a constructed collaborative situation. The intentions behind the objects used for design research are very different to how design is traditionally thought of i.e. not oriented towards new objects as perfected examples of say a kettle or a chair, but instead intended to draw out certain insights or experiences. Sanders and Stappers (2008) define this as designing of or designing for (my italics). Designing of involves the recognisable disciplines of a design studio; product design, vehicle design, interior design etc. i.e. the design of furniture, cars, and rooms. Designing for means thinking about a human centred purpose and involves designing for say, emotion, interaction or sustainability. In the case of my research it means designing for externalisation.

Finally, involving non-designers in the doing of design means developing tools and instruments that they can use without the specialised knowledge provided by a design education or professional design career. Design work thus includes the design of elicitation artefacts. I will call these instruments to distinguish them from an association with collections and museums that the word artefact evokes, and to emphasise that, like a hand tool, they have a specific purpose - in my case the externalisation of digital experiences. Opening up the design process to include the collaborative design of research instruments, whose purpose is to elicit representations of personal digital experiences, is thus an example of open design ethnography, one that allows designers to experiment with conjecturing forms.

In this section three views of design research were discussed; Ingold's definition of anthropology as an opening towards material correspondence, Cross's hypothesis that design has a special epistemological status as a way of knowing about the world, and Sanders and Stappers' exploration of what co-creation means for designers and for design objects. In the following section I will develop the concept of externalisation from the perspective of externalising instruments and their use by participants to represent personal digital experiences.

Externalisation

My research seeks to re-materialise specific examples of the everyday experience of digital systems. Digital experiences reach into many aspects of human life, for example, the way people make and maintain relationships, search for and carry out their work, and diagnose and treat illness. Increased awareness of the ways in which providers of large scale digital experiences profit from their many users has produced new understandings of how digital technologies often represent an asymmetrical power relationship. Using a tracking algorithm, social networking systems build up a detailed representation of their users' social behaviour, including who they communicate with, what they say, images they share and their geographical locations. Online social networks may therefore have a more significant and informative model of the extent and characteristics of users' social networks than users do themselves. There is thus a need for people to be able to observe their own interactions with digital systems, and how they shape relationships, habits, and understandings of how digital systems work.

Personal digital experiences are internalised through repeated encounters with artefacts in the form of complex technical systems, such as browser software or digital cameras. In order to bring about externalisation, instruments that provide a focus for attention are important (Wojtczuk and Bonnardel, 2010). or my research, physical objects, visual representations, and spoken accounts are the focal points around which externalisation occurs. Dix and Gongora (2011) suggest that representation is important in the process of developing a counterbalance to the formative influence of digital systems, and present three types of representation by externalising instruments; schematic, symbolic, and isomorphic.

My analysis will therefore look for what types of representations are elicited by different instruments, with particular attention to materials and activities. My research thus focuses on the material characteristics of externalizing instruments and how they influence the ways digital experiences are revealed. The whole field of design – vehicles, services, graphics, interfaces, architecture – can be thought of as knowledge embodied in different forms of externalisation. The materials used in the process of externalisation have a profound influence on the resulting forms or instruments, and through them on how knowledge is constructed and internalised. For example, people using physical materials tend to explore through examples, while those using pen and paper through abstract categorisation (Ramduny-Ellis et al, 2010). The designer of instruments intended to produce externalisations should place careful attention on the material properties of those tools. In the next section I will describe the externalising instruments I developed and report on the settings and contexts of the research.

Browser history comics

This case study is focused specifically on a visual narrative construction of browser history in the form of comics. Weinreich et. al. (2006: 13) observe how 'the data of clickstream logs have a limited expressiveness, as aims and tasks of the users often stay below the surface'. This case study consequently questions the usefulness of the browser history list and proposes a way of allowing those aims and tasks to come to the surface. The browser history list is an algorithmically derived chronological log of web pages visited. It does not provide any insight into why a site was visited nor the context of a browsing session. Browsing the web results in an impression of 'fog', 'zoning out', and comments such and "oh my god, what have I done with my time?" Many participants report this experience. There is very little differentiation between web experiences in terms of navigation or visual recognition, i.e. social media sites look and work in similar ways, online clothes stores look familiar and it may be hard in retrospect to tell one from another. There is also little differentiation between sites, pages, and platforms.

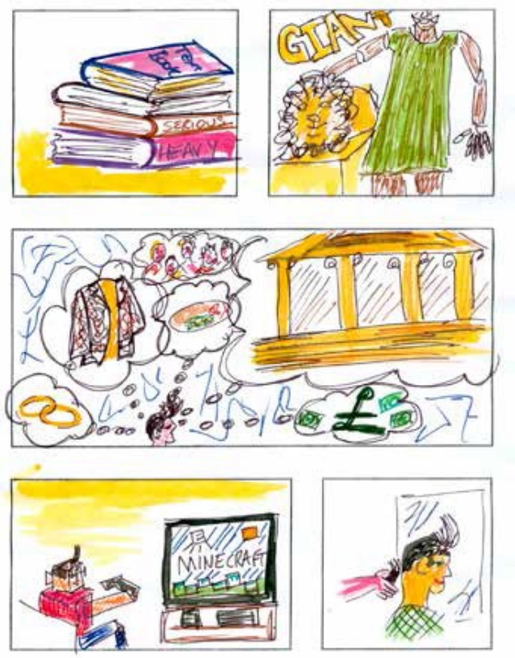


Figure 1. Minecraft and marriage

The first example of self-constructed representations were done by participants who created comic style representations of their browser behaviour. The use of comics drawing as a research method includes Social Comics (Lapides et al. 2011) in which participants are invited to act out scenarios in a digital game setting that are then captured for inclusion in a comic-like photo story. Comics in the form of storyboards have also been used extensively in user experience design (Kantola and Jokela, 2007, van der Lelie, 2006) as way of demonstrating hypothetical scenarios for how people might use a digital system. In order to provide a way for participants to represent their browsing behaviour I asked them to draw their browser history lists in comic book form. Participants were asked to draw their browser history list on A4 paper sheets printed with empty graphic panels. I did not specify how much of the browser history list was required, nor any particular style or visual language. Materials were not kept in a central place but spread across the table with multiple packs of pens, ink and brushes and piles of printed sheets.



Figure 2. Web search

There were no specific instructions about how much of the browser history list they should include, nor how far back they should go through the list. In addition, there were no limitations placed on§ how many sheets participants could use, nor which materials they should employ in illustrating their browser history. No time limit for the task was specified. After the task was completed, participants were asked to describe what they had done and why. These interviews were filmed, and used the completed comic as a stimulus to talk around the topic of browsing, browser behaviour, recalling browsing sessions, and remembering the motivations and reasons for visiting the various websites shown. Stimulated recall was used to add to the richness of participant descriptions and to connect interpretations of web browsing directly to the comic artefact. Transcripts of the interviews were then coded for themes relevant to how externalising instruments work to represent browsing experiences.



Figure 3. Social media abuse

The design input of this research involved designing the activity, the setting, and the instrument. The activity consisted of drawing on paper with a variety of different materials. The setting was a public arts centre in Liverpool. The instrument was a selection of different empty comic layouts printed onto A4 paper sheets. In an important sense then the activity, setting and instrument remained open. The activity was open to the extent that people were free to choose what to depict,, how much of their browser history list to represent, and at what level of fidelity. The setting was open in the sense that the activity took place at a free public arts centre, with no physical or schedule acting as barriers to participation. The instrument was open in that it did not specify what should go where, or what sequence images should appear in, nor in fact that there should be images at all.

Findings

Findings from the browser history comic workshops include; imposing a self-defined structure onto an otherwise elusive experience is useful for externalisation. For example, the comic book form encourages textual annotation of visual images, this means people can clarify what aspect of browsing they want to talk about by labelling it (see figure 2). Textual annotation also means digital entities can be personalised using speech bubbles (see figure 3). In addition, objects can be titled, logos can talk and digital operations such as file conversions listed. The comic form also imposes a narrative structure and frames browsing as a staged sequence of impressions and events.

Often, in the browser history comics these impressions are juxtaposed or multiple browser operations are conflated to a single panel. The openness and flexibility of the comic instrument allows participants to decide which browser experiences to emphasise and supports the contextualisation of browsing activity such as a grouping of sites visited into a single topic i.e. marriage (see figure 1). The comic form also encourages the narrativisation of browser behaviour as a way of rendering what can be an otherwise confusing and overwhelming experiences into a coherent account. Finally, the complex and abstract nature of web browsing requires a simple structure and an open form to work effectively. Next I will describe an externalizing instrument used to model digital social networks.

Social network models

This case study explores the design and use of a physical, non-digital instrument to model personal social networks. Connections are made physically between nodes by stretching elastic bands between coloured pins representing people. The emphasis is on how people choose to represent their networks, what they choose to show, and how the process contributes to uncovering an otherwise invisible set of relations.

Participants were asked to push coloured pins into a white painted cork tile, after placing a white pin representing themselves. The next step was to connect the pins with correspondingly coloured rubber bands, and then annotate the represented individuals with text. Pins were categorised as representing; ‘friends’, ‘family’, ‘colleagues’, and ‘others’. Alongside the physical instruments I conducted semi structured Interviews with participants, encouraging them to talk about what they had done. These interviews were then transcribed and annotated, with particular attention to the role of materials in the process of externalisation. There were no specific instructions about who should or could be shown in the model, nor about how many, or how few connections it was necessary to show. Printed A3 sheets were provided which featured a legend with colours matched to categories, for participants to refer to while doing the task. Participants were limited to one tile only, and to the specific materials and colours described. No time limit for the task was specified.

The setting for this group workshop was a street level former shop front in South London. The unit had three large shop front windows to the street making all the activity inside visible to passers-by. As the workshop progressed over two days, the space was dressed with examples of previously completed network tiles. This provided some inspiration to participants about what the outcomes could be, and also worked as a visual tally of the number of respondents. There were some differences in openness between the browser history comics and the social network models. Firstly, the activates, the people and the outcomes were visible to all from outside the space, which was freely accessible to passing pedestrians. Secondly, the materials used to create the models were more constrained. Participants could use only one tile, could use only pins and rubber bands, and could combine them in a pre-defined set of ways i.e. by connecting different coloured pins with correspondingly coloured bands. Finally, the task was more abstract and did not involve visual representation.

Findings

The nuances of human social experience - degrees of friendship, inclusion in circles of work or family connections, or the different roles people embody in a network of social relations - are flattened by digital social networks to ‘friend’ or ‘contact’ or similar terms. Physical externalising instruments allow for unflattening. This term refers to the process of re-dimensioning the experience of digital social networking and re-introducing the enriching complexities of lived experience. Unflattening is a metaphorical idea, but in this case study there is also a literal element to the term since pushing pins into a surface and linking them with rubber bands is not an activity confined to a printed page or to a computer screen. Unflattening therefore involves adding dimensions to the representation of digital experience where it involves building and maintaining a digital social network. Unflattening reveals subtlety, is creatively rewarding, and allows for complexity to emerge (see figure 5). Unflattening is an effect of externalising instruments and activities oriented towards physical materials and tangible interactions. The use of a physical externalising artefact thus affords adding subtlety to an otherwise flattened digital experience.

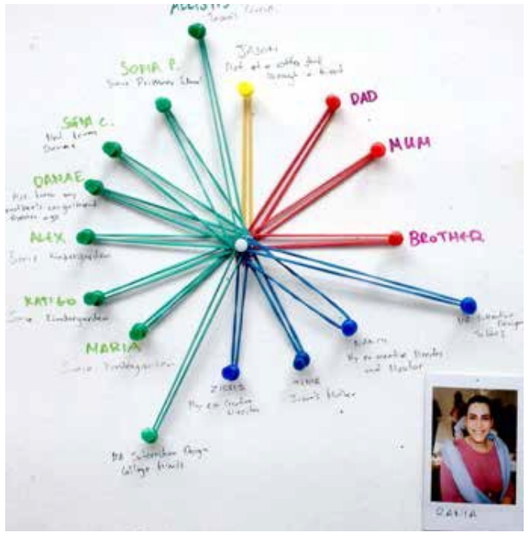


Figure 4. Clock shaped network model

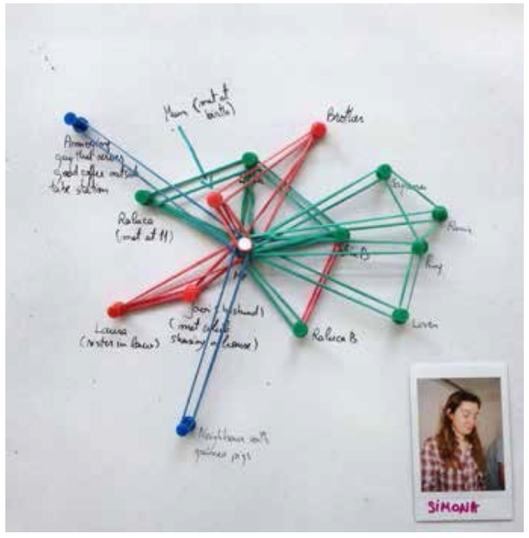


Figure 5. Friends and acquaintances

Most digital social networking systems do not allow the user to assume multiple identities from the same account or to operate multiple accounts from the same identity. Facebook, Twitter, Instagram, and LinkedIn all enforce this limitation. The different roles assumed by participants in their social networks are therefore flattened to a single name, profile picture, and description. Modelling their digital social networks in physical form allowed participants to assign more than one identity to themselves and others in their networks.

For example, participants have added additional pins and connecting bands to signify different identities rather than, say, annotating a single pin. So materials may be constraining, but also afford the representation of multiple identities by allowing participants to adapt materials to personal uses.

Social networks are not fixed. During the activity participants started to adjust their models in the light of what was revealed (see figure 4). Five participants moved pins to a different location on the tile while discussing their models. Ten participants added or removed connections during interviews. This demonstrated how interpretations of digital social network experiences are unstable. They are not fixed understandings but subject to transformation. This may reflect the materials used to externalise them. Dix and Gongora make the point that 'The nature of materials and tools has a profound impact on the kinds of externalisations produced.' (2007:5). So models made of pins that can be easily placed, removed and repositioned connected by rubber bands that can be easily stretched, moved and replaced influences representations of social networking.

Finally, the distinction between digital social networks and social networks in general was found to be indistinguishable. Participants did not always distinguish between online and offline social networks. This suggests both types of social network are contiguous, and a model of one may stand equally for a model of the other. In stimulated recall interviews the distinction became clearer, especially with the focus on interpretation of experience. In the next section I will describe the final set of externalising instruments.

Physical models

The third case study for which open externalising instruments were designed focused on a range of digital experiences including algorithms, online personal profiles, image metadata, and cloud computing. The difference to case studies one and two is that the activities were applied in a real world setting, one with a pre-existing set of aims and objectives. Another point of difference is that participants worked together in groups to model aspects of digital experience that they deemed important and useful. The physical setting was a top floor office space with standard office equipment and furniture, a space familiar to most of the participants as their daily workplace. The room was large enough to work in groups but offered limited possibility for rearrangement.

Materials were chosen to complement each other as a stimulus to creative exploration. Groups of materials were placed on the tables in no particular relation to each other but available to use as required. A collection of materials, such as foil, string, paper, tape and pins was also freely available to all. Drawing on the way participants engaged readily with the cork tiles, pins and rubber bands of case study two, I did not specify how materials should be used, merely made them available in distinct combinations as follows:

Table 1 - Cork spheres, copper rods, magnets, felt strips. Some pairings of materials suggest ways of constructing without prescribing how i.e. magnets are a way of connecting materials without glueing or taping. Felt strips can be tied together or pinned.

Table 2 - Transparent plastic tubes, coloured ink, fishing line. Tubes can be filled with coloured liquid, fishing line can be used to suspend or connect.

Table 3 - Perspex rods, pipe cleaners, wooden beads, transparent perspex hemispheres. Spheres can be filled, pipe cleaners connect to each other, wooden beads roll and can be strung.

Table 4 - Reflective metallic card, coloured paper, paper straws. Straws connect to each other and can be filled, metallic card reflects paper colours. Straws cam also be blown through, balanced and grouped.

The task was thus opened more completely to participative creative exploration. Participants were encouraged to combine materials however they wished, they worked in groups, and defined the topics to be explored themselves. The outcomes were also more sculptural than the paper based comic drawings of the browser history task and the flat cork tiles of the digital social network models.

Findings

Findings from this case study include how group activity has the potential to set the criteria for future collaborative work in organisations.

"Everyone goes off and does things, and it kind of becomes a glue... and so you're actually setting norms for how the group then behaves, so it's part of the social dynamic". D.



Figure 6. Model of cloud computing

The act of distributing knowledge throughout the participant group produces standards and examples for future practice. Doing creative work, freely exploring a constrained range of materials with a specific goal was seen as enriching and rewarding beyond the limits of the workshop itself. Being exposed to an open design research process informed adjacent areas of work within the organisation. While these effects may be unforeseeable for design researchers, they should nevertheless be aware of the wider significance of participative activities on participants and the other work they do together. Designing creative activities means thinking about how they should be structured, what resources they should draw on, and what affordances and limitations are necessary to implement, or important to avoid.



Figure 7. Model of a personal digital profile

Working with tangible materials to elicit personal interpretations of digital experiences helps to focus attention on the salient parts of digital technologies (see figure 8). Tangible materials also break down some significant barriers to engagement for expert and non-expert participants alike.

*"I think any time you have something that's hands on, and touchable and tactical, it allows for these other modes of understanding and so that can only be a good thing".*R

Thus, participants with expert knowledge of digital systems were obliged to represent that knowledge in ways that others could understand (see figure 6). Non experts could develop representations for digital experiences, such as image metadata, using accessible and easy to use materials. Tangible materials then, break down some significant barriers to engagement for expert and non-expert participants alike.



Figure 7. Model of image metadata

Finally, When creating externalising instruments for image metadata, algorithms, cloud storage, and online profiles, participants turned to metaphors (see figure 7).

(If we had been told to do a drawing) *"I think it would have been different in the sense that you wouldn't have been able to use as many metaphors."* J

There was also a recognition that the dominant metaphors used to convey abstract digital phenomena, such as padlocks for privacy, and keys for security, are obsolete and ineffective. This connects with Douglas and Isherwood's concept of the 'metaphoric appreciation' that they say designers are particularly skilled at. My research suggests that designers and design researchers can extend this ability to their participants by involving them in collaborative creative activities and choosing non-digital materials that can be easily combined and configured. In the next section I will briefly give a sense of what designers working to create instruments for participative design research should consider.

Recommendations

Recommendations for designers working in this area include how to deal with materials. The materials chosen for the creation of externalising instruments should be easy to use and accessible. Where materials are not intended to be used in any specific manner, they should be combined in unexpected ways. For example, string, ink, and clay have separate and familiar affordances and together do not suggest any pre-defined use. Materials should be human scaled. They should not be too heavy to lift, or too small to manipulate. They should also be small and light enough to be transported and passed around between participants. If materials are intended to be re-used or adjusted they should not connect in permanent ways i.e. with glue, solder or locking parts but instead be temporarily attached with magnets, string, or rubber bands. Materials should be easily obtainable from non-specialist sources. This means using common materials in new and unexpected

ways. For example, using stationary supplies familiar from office environments means instruments can easily be developed by participants themselves. Using freely available materials also demonstrates an important design principle. The imaginative potential for externalisation lies not in esoteric materials but in the tacit knowledge of participants about their own digital experiences. Using familiar materials means participants can enter the process without having to learn new skills.

The materials chosen for the creation of externalizing instruments should be constrained. Setting constraints means indicating what people should do, and with what materials. The carefully selected set of materials, such as the cork tile, coloured pins and coloured rubber bands of case study two allowed adaptation, imaginative exploration, and personalisation to be the focus of the activity.

Materials should also be combined in constrained but complementary families. For example, one group of materials in case study three contained wire, felt, cork spheres and magnets. This group thus has two metal materials, one malleable and one connecting - and two more yielding materials, one soft fabric and one spongy cork. They are diverse but reciprocal.

Constraints make designs 'easier to use and dramatically reduce the probability of error during interaction' (Lidwell et al. 2003: 50). In the case of my research, constraining participants to drawing on a paper sheet, or sticking pins into a cork tile meant the task and the instrument was legible to participants. Norman (1988) explains how 'the thoughtful use of affordances and constraints in design lets a user determine readily the proper course of action, even in a novel situation.' (1988: 82). So, when faced with an unusual set of materials (such as mirrored card, transparent plastic spheres, and coloured string) and an unexpected task (such as physically modelling cloud computing) constraints work to clarify and simplify what participants should do.

Conclusion

The distinction between designers and researchers in the context of co-creation is blurred to the extent that the design of research methods involves creating settings, activities, artefacts, and materials. Along the range of proactive conjured by the term ethnography, this view positions design ethnography more as a form of design practice in itself, than a category of social science research or an assemblage of ethnographically oriented data collection methods. This kind of design practice is neither purely observational - although it may feature observation the form of photographic or video documentation - nor is it about the iterative perfection of physical products. Rather, it invites research participants into the kind of correspondence with materials that Ingold proposes and resonates with Lenskjold's ambition to 'produce new perspectives on socio-material interactions'. In my case this is related to the interaction between people and digital systems explored through various different materials and representing strategies.

Finding out about things by making them is emphasised by Cross and his concept of 'immersion in material culture' (Cross, 2006: 10). Design research done by designers can then also be expected to involve an immersion in materials, albeit to a different end. Knowledge production, conjectural insight or data gathering may be the intent, designed artefacts the method. Extending this argument further, by opening up the process of design to include research participants, as Sanders and Stappers observe, involves a breaking down - which is also an opening – of the distinctions between researchers and participants. This implies that participants will, by extension, also be immersed in materials when creating objects. Want these objects are able to do 'as a nonverbal medium for the human relative faculty' (Douglas and Isherwood, 1979: 62) is provoke, reveal, and elicit human values and opinions.

Finally, an open ethnography in the context of design research is one that makes specific attempts to dissolve the boundaries between designer/researcher and participants. Open ethnographic methods should feature artefacts that can be shaped, completed or invented by participants. Open ethnography can also be oriented towards exploratory and generative outcomes, ones that prioritise involvement, collaboration and conjecture.

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"Build together!": observational study on outdoor activities engaging children in design

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ABSTRACT

Ethnography has been employed with marginalised user groups, such as the elderly, people with disabilities, and children, with their needs and special considerations being acknowledged in design. Until recently, design ethnography has been broadly applied in some domains of design, particularly Human-Computer Interaction research, but far less in others. With little ethnographic research being used in design, the study tackles this deficiency through a designer applying ethnography to study children in conjunction with a design project. A short-term observational study was conducted on children's outdoor activity in Finland during the summer 2012. This study demonstrates the effectiveness of design ethnography in understanding children's innate sense of play and culture in naturalistic settings. Through this research, sufficient evidence arises enabling the investigation of certain phenomena: 1) meanings of children's play, 2) children's interests and dislikes, 3) different roles of children and adults, 4) respective activities initiated by children and adults, and 5) a distinctive notion among children concerning the relationship between result and process. The novelty of this study is that a designer applied ethnography to sophisticated understanding of children to initiate the design. This research provides opportunities to allow adults to access the children's world, to draw more attention to children's voices and rights, as well as to engage their participation and collaboration in the design process. The observations indicate that children's collaborative work potentially reveals their views and needs in their social lives and capabilities. Furthermore, this study contributes to providing practical guidance for adults working with children.

Keywords

design ethnography, engagement, children's outdoor activity

INTRODUCTION

In studies of childhood, ethnography has been successfully applied by a number of scholars (Angrosino 2007; Antoniou 2007; Levine 2007; McKechnie 2000; Wyeth 2006). However, these studies focused on children as subjects of the research, not as research partners. In studies with children as active and contributing participants, a different approach and considerations are naturally required. For example, several research techniques working with children in research require special consideration in terms of children's immature development and their own culture (Baker and Weller 2003). Some scholars have argued about the weaknesses in ethnography, in particular, its implementation for design (Dourish 2006; Friberg 2004). Design ethnography has been broadly applied in Human Computer Interaction (HCI) research (Crabtree, Rouncefield and Tolmie 2012; Lazar, Feng and Hochgeiser 2010). However, ethnographic study has still been a challenge in other design domains. Based on the notion that implementation for design is often not effective and useful, a natural consequence would be for a designer to conduct her own ethnographic study.

The research explored a short-term observational study on a children's outdoor event, the 'Hut Building Camp' undertaken in Espoo, Finland in June 2012. This study offered an experimental opportunity to work with children in outdoor settings and engage simultaneously in natural conversations throughout the process within designer's viewpoint. It demonstrated the effectiveness of design ethnography in understanding children's play and culture in naturalistic settings (Wyeth 2006; Pellegrini, Symons and Hoch 2004). In addition, this study covered literature review about ethnography and children's involvement in research and design. Although the ethnographic study structure of HCI was employed as a research method in this study, it has no direct link to HCI. This research reveals several significant aspects: 1) meanings of children's play; 2) children's interests and disinterests; 3) different roles of children and adults; 4) activities initiated by children and adults, respectively; and 5) children's distinctive notions of result and process.

This research allowed adults to access the world of children, to highlight children's voices and rights, as well as to enhance their participation and collaboration in the design process. The observation indicated that children's collaborative work potentially revealed their views and needs in their social lives and capabilities. It could also be relevant in terms of possible design opportunities for and with children. Furthermore, this study contributed to providing considerable practical guidance for adult designers or researchers who work with children, such as the initial process of building

relationships, relevant responses to children's expressions, as well as encouraging children's participation and collaboration in order to guide them to improve the design process and outputs.

Ethnography and Children's Involvement in Research and Design

For several decades, childhood has been studied from an anthropological perspective, which based on field observations and interviews, has examined children's lives, activities and experiences in particular places and times (Wyeth 2006). Several scholars have focused on studying the contexts of marginalised children and the problems related to them (Levine 2007). In the field of childhood studies, researchers consider ethnography as the most effective methodology for studying childhood (Wyeth 2006; Levine 2007). From the 1920s, anthropologists have published ethnographic reports on childhood among human populations across the world, devised and refined observational approaches, and developed and borrowed theoretical frameworks for analysing data collected from fieldwork (Levine 2007).

Ethnography has been defined as "the art and science of describing a human group – its institutions, interpersonal behaviours, materials productions and beliefs" (Angrosino 2007). It has concerned with the group member's perspective and experience. It theorises the manner in which members' experiences can be understood in terms of the interplay between members and the ethnographer (Button 2002). According to Dourish (2006), " Ethnography is 'Stories that people tell themselves about themselves', and the ethnographer tells a story about ourselves". Moreover, it is based on real stories in the setting of members' own environment rather than laboratory settings.

The User-Centred approach has led numerous researchers and designers to the realisation that research is essential to creating improved design. Marginalised users, such as the elderly, people with disabilities, and children have had their needs and special considerations examined in design. In particular, Child-Centred Design (CCD), which is derived from User-Centred Design (UCD), concerns children as end-users (Scaife, Roger, Aldrich and Davies 1997; Pardo, Vetere and Howard 2005). Over the last three decades, the role of children has transitioned from subjects to be studied to collaborative partners (Christensen and James 2001; O'Reilly, Ronzomi and Dogna 2013).

Recently, the involvement of children has risen in various aspects (Tonucci and Rissotto 2001; Driskell 2002), and the convention on the Right of the Child highlights children's right of participation (UNICEF 2011). Several researchers have pointed out the merits of children's participation and there have been global movements to actively involve children in environmental planning and design (Matthews 2001; Lozanovska and Xu 2012). The level of children's participation is affected by their capacity to understand the topics and related matters (Hart 1992). In design, in accordance with this change, Druin has defined the different roles of children as user, tester, informant and partner in the design process (1999); therefore, children have become increasingly involved in various design projects as design partners (Kelly, Mazzone, Horton and Read 2006).

Children are aware of their own views and experiences. However, understanding these experiences, structures and attitudes in childhood might be difficult for adults, therefore children should perform as social actors as a means of providing access to other children (Alderson 2008). Adult researchers emphasise the value of listening to children, but it is more effective when children express themselves through doing and reporting their own research (Jenks 2001). On the other hand, the dangers of token involvement and of misreporting children's view have increased (Hart 1992). However, by enabling children to be involved, this is an initial way to respect children's right as well as this can open up new directions and possibilities for research and design.

Preliminary Research Design

Gaining access

This 'Hut Building Camp' event invited children who were from seven to twelve years old as well as from Finnish and international backgrounds. The research was conducted for twenty-four hours and documented with sticky post-its fieldnotes, sketches, photographs and video recordings of the event. The collected data required approximately seventy-two hours for analysis after the fieldwork. This fieldwork did not have a tendency related to HCI directly, however the research procedure was appropriate in the general design process. Hence, this research has followed the ethnographic study structure of HCI, which were proceeded by: 1) selecting groups to study, 2) choosing a form of participation, 3) making initial contact, 4) building relationships with the group, 5) iterative data collection and analysis, and 6) reporting the results (Lazar, Feng and Hochgeiser 2010). After the fieldwork, interesting phenomena were addressed and provided evidence for further design opportunities.

The camp was organised during weekday for four to five days in a forest in Espoo, Finland. Forty children participated in the event, and they divided into five different groups based on their ages and hut-building experiences. One group consisted of eight to ten children, and one or two adult instructors. Four groups undertook the session in Finnish along with one in English. The designer who conducting the ethnographic research participated in the English group due to the Finnish language barrier; however, she conducted some observations on the other Finnish groups as well. The role of designer was a researcher as a participatory observer during the event. She observed, interviewed and interacted with the children. In the role, great care was taken to balance between the roles of complete participant and complete observer.

Due to insight into the perceptions of the event (Parnell, Cave and Torrington 2008) and a background of the constructive research plan, this study included initial interviews with the principal and head teacher of the event organiser. The interviews and preparatory visit were undertaken in the actual camping site in advance. The interview with the head teacher included a semi-structured and open-ended interview as well as discussion. Therein, she provided a short summary of the 'Hut building camp' to ensure a holistic understanding. The event aimed to teach children how to build a basic structure for houses in a natural environment. This required some fundamental knowledge; however, the majority of ordinary adults did not possess it either.

It was relevant to build a positive relationship with children at the beginning of the study. Thus, visiting the camp was needed to become familiar with the circumstances and participants well in advance. On the first day, the designer visited the camp location to become acquainted with the children rather than collecting data. She introduced herself to children and explained the research as well as requested permission to take photos and videos of them. This was carried out even though she had already received permission to conduct this research from the organiser, which received consent from the children's guardians. This procedure was required to make the children feel comfortable and pleased to interact with the designer.

Immerse and collect data in the field

During the event, the designer jotted notes on sticky notes and sketched to capture the process of the event and matters related to the participation, collaboration and creativity of the children. The fieldnotes were jotted in post-it notes because they were portable and an agile way to jot down observations (Emerson, Fres and Shaw 2011). However, these notes were created in a relatively short time, so the memos required partially rewriting after the event. All the utilised materials during the fieldwork were categorised in certain issues. These rewritten notes were arranged by chronological sequences and related actions. In addition, she recorded interesting moments with photos and videos. However, active participation to obtain a thorough understanding of the circumstances was the main aim of the study. The resulting recorded data were subordinate materials collected largely for remembering the event.

This study mainly adopted participatory observation and combined different research techniques: observations, interviews, drawings, taking fieldnotes, and taking photos as well as video recordings. The semi-structure interviews with the teachers were conducted, but not with the children. Letting children talk was a practice that enables greater insight into the subjective meaning that domestic work conveys to and for children (O'Kane 2007). During the event, children built different types of huts: tepees, tree houses, tunnels and dorms under the instruction of the adult leaders. This building process was documented with sketches and photographs.

In the English group, the designer was engaged as a participant researcher and an assistant instructor. The main adult instructor in the group was a former student of the event organiser and had hut building experience. In the group, there were three boys and seven girls, who were eight to eleven years old. Together, the participants began the session by introducing themselves, and writing down the children's names on the sticky tape attached to their vests.

The weather was somewhat cold with light precipitation, but it was difficult to know what to expect. It changed occasionally with heavy showers at times. The children did not appear to mind the poor weather, but they sometimes complained about the weather after the period of rain. As a result of the unstable weather, the whole event spot was muddy. Moreover, there were quite many mosquitos in the forest, so an insect repellent spray was required. In terms of the dramatic weather, children needed to dress warm and have waterproof or water-resistant clothes, gloves and footwear. In addition, all the children were dressed in safety vests over top of their clothes.

The programme started at 9:00 in the morning and continued until 16:00 in the afternoon for five days. However, it was flexible, and the daily programs were adjusted depending on the weather and progress of work. At 9:00, all the adult instructors and children participants gathered for some warm-up activities: calling out the participants' names; responding with given physical actions; and doing light gymnastics in the middle of the event location. From 9:30 to 11:30, the participants constructed huts as groups or took part in other activities (games, excursions, and art activities). The lunch break was between 11:30 to 12:30, and the children could also have some free time. After lunch until 14:30 in the afternoon, they had another building or different activity sessions. If the building session was conducted in the morning, other activities were undertaken in the afternoon. Around 15:00, the adult instructors provided snacks for children, such as grilled sausages or pancakes. The participants needed to pick out and sharpen wooden branches for grilling the sausages. After all the activities, they continued building huts or enjoyed free play before their parents came to pick them up.

Initial findings

This study was an experimental case of working with children in an outdoor setting and engaging them in natural conversations throughout the process. It demonstrated the effectiveness of ethnography in understanding children's different meaning of plays and their interest in naturalistic settings. Through this research, significant findings could be articulated with possible design opportunities for and with children. For instances, the fundamental process of building relationships, relevant responses to children's expressions as well as encouraging children's motivation, participation and collaboration in order to guide them to improve the process and outcomes. The initial categories of findings follow below:

- Material experience: The children had interests in natural and novel materials. However, some children dislike and hesitate to touch dusty and muddy materials.
- Play, tools and safety: The children were keen on physical play creating their own toys, and using real tools and plays. They also understood the importance of their own safety.
- Process rather than results: The children focused on the creating their own play and equipment process rather than its outcomes.
- Comparison of results: The children compared the outlook of their huts with other groups'. In particular, they concentrated on comparing sizes rather than functions, materials, structures, and so forth.
- Motivation from competence: The children had more motivation to proceed when they had some degree of competence. Less competence along with an iterative work process decreased the children's attention, interests, and motivation.

- Different levels of collaboration (an adult-initiated collaboration, a child-initiated and directed collaboration, a children-initiated and directed collaboration): The children initiated and directed collaboration continued with high motivation and pleasure.
- Building a sticky relationship: Constructing trust in others helped to decrease the children's fear and to achieve task completion collaboratively.
- Let children do: The children had more motivation to tell, work, and express their thoughts when they were free and comfortable.
- Procrastination: The children tended to refuse and procrastinate on iterative work and work which they had less confidence in doing. They were willing to disburden themselves of it to others.
- Less chance, less motivation: The children lose motivation when they had less opportunity to choose. However, it did not mean that limited sources was linked to reductions in the children's creativities.
- More enthusiasm for personal creation: They were keen to create their own toys with natural materials. They wanted to show and explain the outcomes.
- Increasing authority and enthusiasm: The children were able to build authority and encouragement through their own creations.

Expectation before the fieldwork did not fully match the actual observations. Even though the research manifested the significant findings on the children's perspective of materials, nature and plays, however building houses according to the children's own ideas could not be found during the camp.

In this event, there were some difficulties and limitations conducting the study: balancing roles between a participant and a researcher, little expert knowledge on building huts, language barriers (Finnish) and time limitations. In addition, examining the children's collaboration was restricted in terms of the circumstances of the group work. The children did not have opportunities to work or play with children from the other groups. They had more chances to work and talk with peers in the same groups. Hence, this study needed to extend further.

Interesting Phenomena

Starting from negative atmosphere

One of the biggest impressions of this whole event has started from a pessimistic tendency. Comparing other groups in the hut-building event, the group focused in the research was mostly unmotivated, less participatory and collaborative as well as adult-directed atmosphere. Children in this group could not meet motivation and goals of this event; therefore, they lost interest in it. Some of children did not appreciate to work and passively participated in the process. Several reasons, which made this tension and unfavourable atmosphere, could be estimated. First, the main adult instructor forced the children to work constantly. Second, the building process was complicated without previous experience or backgrounds; therefore, children could be lost. Third, the children had a weak boning among members in the group. Fourth, language could be one of the barriers to get close to each other in this group: instruction was guided in English, but it was not the children's mother tongue. Consequently, the children had different building experiences and they lacked opportunities to get to know each other among the peers and adult instructors.

Meaning of Children's Play

Lego's example of ethnography research at the early 2000's described that adults occasionally misinterpreted and misdirected in designing artefacts for children. The research also verified the importance of the basic: 'What are the meanings of play?' According to Tassoni (2006), he has described free (unstructured) play as child-initiated activities and structured play as adult-directed activities. Each side has its pros and cons. Free play or child-initiated activities support children setting their own goals, keeping the long period of concentration, creativity, responsibility, learning how to choose, gaining confidence and mastering skills. On the other hand, structured play or adults-directed activities supports children learning ensured curriculum, gaining specific vocabulary and skills (Tassoni 2006).

Child-initiated activity	Adult-directed activity
- Climbing huts, tree houses or ladders - Hanging ropes - Swinging - Making own toys, such as archery, guns, swords, arrows - Game 'What is the time, Mr.Wolf' - Playing with balls - Digging fire place - Building work during break period	- Calling children's names - Carrying timber and working materials - Cutting wood - Holding structure - Tying structure with rope - Weaving reed carpet - Making caution sign - Hiding and Finding treasure - Measuring timber

Table 1. Child-initiated vs Adult-directed activities during the hut-building event.

The findings from the field research proved that structured play differed from adults-directed activities. Existing games of play had its own structure and children could initiate them. For example, in the play, 'What is the time, Mr.Wolf?' children initiated and actively played. In this study, children demonstrated different outdoor activities. It was interesting to categorise activities based on child's initiatives and adult's direction (Table 1). These findings could closely link to children's interests and motivation as well.

Children's interest vs dislikes

Children could be interested in everything. Table 2 has described children's interests and dislikes during the hut-building event (Table 2). The participants showed great passion about new materials, tools, actions or works. In this study, the participants were keen to engage in a physical form of play, such as climbing, jumping and hanging. They were hanging on the ropes occasionally and made different types of swings. They were also excited to create their own toys. The boys tended to be enthusiastic in making bows and arrows, as well as gun types of toys with actual tools such as hammers, nails, sews and knives. For safety reasons, the adult instructors needed to pay careful attentions to the boys, who had and played these types of toys. However, the children were aware of the safety issues. They made warning and caution signs by themselves (Figure 1). This activity indicated that children demonstrated to the authorities some responsibility for their own initiated outcomes. Ensuring the children's safety was important, but it was more relevant to teach children to aware of and be responsible for it.



Figure 1. (top-left) a physical form of play; (top-right) creating own toys with natural materials and tools; (bottom-left) creating own toys and plays; (bottom-right) warning and caution signs created by children.

In addition, three young participants were interested in capturing the outcomes or moments, which they were proud of and willing to show. According to conversation with one boy, he mentioned that he could speak Finnish, English, Swedish and some Japanese. It seemed that he was not fluent in all the languages, which he mentioned; however, he wanted to boast about himself. He wanted to be included in photos, and he also took some photos of the huts with his mobile phone. He expressed pride in his work and showed enjoyment during the conversation. As another example, two boys created a wooden sign and crossed bridges carrying it. They read the word on the sign while they were recorded on the video. They repeated the word with shaking the sign to show the pride and willingness of their creation. Contrastingly children lost their interests in iterative work or process: tying structure with rope, holding structures and weaving reed carpets. However, the iterative works with using tools continued a little bit longer period. During these dislikes activities, children lost their motivation as well.

Role of Children and Adults

The participants were occupied in various roles during the whole event. First, the children learned how to build natural huts and participate in it as builders and makers. They created their own toys and plays as well as they found their roles in the plays. Some children were more onlookers rather than active workers. The adults organised the camp and instructed children how to build the huts. They guided and supported children during the building process. In addition, the adults cooked and served food for children.

Interests	Dislikes
- Physical play such as climbing, jumping and hanging - Natural materials - Using tools (hammers, nails, sews and knives) - Taking photos - Being taken photos - Being taken video - Cooking (pancake, sausage) - Food (pop corn, sugar, ketchup, jam) - Hiding and Finding treasure - Big scale (real scale) - Writing sign on the panel - Swing or shaking objects - Making own tools (toys) - Own plays - Making fire - New work	- Tying structure with ropes - Holding structure - Weaving reed carpets - Iterative work - Long distance walking

Table 2. Children's interests and dislikes during the hut-building event.

The adults occasionally tended to order actions to children and the children were forced to take the orders. This attitude did not arise consciously, but it frequently appeared between the adults and children when they were working together. In this occasion, the adults could defend their attitude to focus on learning purposes and leading outcomes. However, the relationship and interaction between adults and children needed balance between its enforcement and directions.

Process and Results

The children constantly complained about their boredom.
One boy asked several times how long he had to work on the hut-building activity. The constant work was not easy for young children. For instance, children grew tired of the weaving, tightening and keeping positions for the building structure. Contrastively, they presented their interests in new tasks; however, they became easily tired and bored with them as well as they eventually wanted to escape from the work. They were more enthusiastic when working with tools, such as cutting wood with saws and hammering nails. To overcome this, the main adult instructor in the English group emphasised a constant working process rather than outcomes. She mentioned that outcomes were not important, it could be anything and adult instructors had to teach children to keep working. There was no doubt that the importance of the learning process rather than results. However, it was difficult to persuade children for working constantly when they did not have the motivation and desire for it.

The children indicated great enthusiasm for cooking, for instance, with grilling sausages and frying pancakes. Occasionally, they had more interest in cooking rather than food itself. They did not mind the nature of the food itself. On the other hand, children put more emphasis on the size of the huts. They compared the size of their tepees with the outcomes of the other groups. They expressed disappointment if their tepee was smaller than others.

Discussion

Children‘s Collaboration

From this observational study, different levels of children’s collaboration were discovered. The first one was an adult-initiated collaboration between children during working on given tasks, such as carrying materials, holding structure or tightening components. To achieve the given tasks, the adult instructor needed to encourage the collaboration among the children. In this instance, the children had less motivation and no desire to work. The second was a child-initiated and directed collaboration. For example, one girl compared both sides of the weaving work, and then she asked her friends to work on one side, which had been worked on less and, thus she wanted to balance of the outcomes. The participating children demonstrated a little more motivation and enjoyment. The last one was a children-initiated and directed collaboration. This collaboration simultaneously occurred among the children and spontaneously continued. It demonstrated high motivation and lasted a longer period with more pleasure compared with the other collaborations.

Building Relationship

The observed group did not possess a close bond as a group. Some of the children had participated in courses, which organised by the same organiser of this event. However the main adult instructor seemed not to have any previous relationship with the children in the group. In addition, the children mostly relied on their previous relationship; for example, the children were being together with their own friends who they had already known. It was difficult to find any improvement of closeness among team members even though the young participants had been working together for a week.

On the other hand, improvement of an individual relationship between a child and adult designer, who was one of the instructors, could be found during the event. The girl seemed shy and quiet; therefore, it was a little bit challenging to have conversation with her at the beginning. The conversation carried by introducing each other and naturally moving on to personal stories. On the first day, the girl talked about the mosquitos and showed where she was bitten. In addition, she said that she could not work any more during the excursion. Our conversation was nothing special, but she got familiar with the designer. On the third day, she made a piece of wood with muddy handwriting on and gave it to the designer as her birthday present. This proved the procedure of the building relationship between the child and adult within the ordinary conversation.

In addition, it was interesting to investigate how a child’s fear and belief changed. Once one girl climbed up to a tree house to build a structure, she was afraid to come down. The adult instructors provided physical supports helping her to climb down, but she hesitated to accept the help. After several trials, she accepted the help and finally came down. This sequence demonstrated that a child needed persons to rely on when she expressed a fear or were placed in an unfamiliar situation. Without this trust between a child and adult, then the child required time to accept helps from the adult. This further highlighted the need to build a strong and persistent relationship between a child and adult was a fundamental step in working with children.

Competence, Motivation and Participation

To build a desirable relationship between an ethnographer and participants, it is essential to respect the participants. During the photographing and video recording, some children did not want to be shown. The recording should be stopped immediately if they expressed unpleasant feelings. On the other hand, other children enjoyed having photos taken of them and their creations. Moreover, one child requested to show him these photographs and video recording. The child explained that she was not good at specific tasks, and she did not want to do them. On these occasions, the children worked with passion when adults engaged with or encouraged them. They had considerably more motivation and enthusiasm when they worked on a task for which they had some competence. From the failure of collaboration between the adult instructor and children, this research could provide tactics of organising activities for children and working with them for the adult designers and researchers (Table 3).

What to do	What should not to do
- Deliver clear aims and goals of activity. - Explain the process holistically at the beginning. - Explain the process in detail step-by-step. - Combine telling, showing and doing to deliver new information or instruction. - Define and allocate children’s roles - Encourage children to experience different roles. - Be patient to wait children to answer and react. - Make balance child-initiative activities (free-play) and adult-directed activities (structured-play). - Applaud and encourage children.	- Do not explain too many new information or instruction once. (Divide the procedure based on children’s previous experiences.) - Do not command to children. - Do not push hardly and constantly to children when they express their unwillingness and unmotivated attitude. - Do not ignore children’s difficulties and conflicts.

Table 3. What to do vs what should not to do when adults work with children.

Conclusion

This study employed ethnography as its main research method due to its iterative learning and reflective process. One of the key features of ethnography, ‘learning by doing’, is a well-known and primary notion among all generations, which rendered it ideal for use in this study. Furthermore, a core principle of ethnography is immersing researchers in the world as a child who absorbs everything to learn the world (Crab, Rouncefield and Tolmie 2012). Through the ethnographic method, this research provided opportunities to comprehend children and undertake proposals for design from them. Moreover, this study provided evidence on the best approach for working with children, including less helpful approaches.

From this observational study of a children’s outdoor activity, the initial findings could be implemented for design cases for and with children. Young people naturally have interest in natural materials and the enthusiasm to create their own toys and plays. This natural interest provides opportunities for tactile and sensory education as well as physical, natural and social plays, which are essential to children. Based on the findings, material study approaches and toolkits for children will be developed in further studies.

This research examined the novelty of the designer applying ethnography as the main research method in order to expedite providing the design opportunities. Hence, this ethnographic study discovered the extensive potential of opportunities from different aspects. To enhance the children’s learning hut-building experience, tangible materials and kits can support their comprehension of the basic structure and process of the hut building.

Learning through play is one of the long lasting teaching and learning approaches. Moreover, this research emphasised playfulness and intuitiveness of the kits. Even without guidance from adults, the kits should generate children’s motivation to play and naturally connect with their learning to build experience, similar to Lego’s principle.

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What is open design for ethnography? An open discussion

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ABSTRACT

Ethnography has been adopted in other fields for years, but the integration process has been a significant learning curve for both the ethnographers and practitioners from other fields. This wide adoption has created various subfields such as Design Ethnography, Urban Ethnography, and Anticipatory Ethnography etc. These ethno-fusions represent different interpretations of ethnography under the influence of other disciplinary nuances. Ethnography has shown us its potential flexibility and fluidity and the discussion continues: how and where will ethnography make its next big leap? In this research paper, we open a discussion with the Cumulus community by exploring the following three questions: 1. What could open design mean to Ethnography? 2. What are some challenges when applying ethnography in multi-/inter- disciplinary context? 3. What is the future of the openly designed ethnography?

Keywords
open design, ethnography, interdisciplinarity

Setting the Scene

In the past two decades, ethnography has been widely adopted, used, celebrated and criticised by some disciplines and fields (Grudin and Grinter 1994; Hammersley 1992). This widespread adoption has created various subfields such as Design Ethnography (Salvador et al. 1999; Crabtree et al. 2012), Urban Ethnography (Houston 2011; Yi 'en & Yi'En 2014; Thomas et al. 2016), and Anticipatory Ethnography (Lindley et al. 2014). In this regard, ethnography has been made 'open'. These ethno-fusions represent different interpretations of ethnography under the influence of other disciplinary nuances. Ethnography has shown us its potential flexibility and fluidity and the discussion continues: how and where will ethnography make its next big leap? In this research paper, or open discussion as we call it, we explore the following three questions: 1. What could open design mean to Ethnography? 2. What are some challenges when applying ethnography in multi-/inter- disciplinary context? 3. What is the future of openly designed ethnography?

Ethnography has been adopted in other fields for years, but the integration process has been a significant learning curve for both the ethnographers and practitioners from other fields. Ethnographers hold tight to the purity of ethno-methodology. Record and report, ethnography ends there. While in other fields, there has always been the push of 'design implications'. Ethnographic methodology also changed from merely informing design to providing critical elements to the practices, especially the process. This encounter is also mutual, because ethnography gains new forms and possibilities as it is employed designerly. The freedom and experimental propensity in design research reciprocate to the methodology itself, yet this freedom and experimentation has brought reputational risks to 'authority' and 'integrity' of ethnography. We seek to explore these tensions in our paper.

Considering the format of this paper (i.e. an open discussion), we base our paper on our experiences with ethnography (auto-ethnography), our on-going conversations with the ethnography community, existing credited sources (research papers, articles and blog posts), as well as primary interviews that we have recently conducted with ethnographers who have been the champions for applying ethnography in other fields and ethnography adopters who come from other backgrounds. Finally, with this paper we intend to open a discussion with the Cumulus community: where lies the future of ethnography?

The Main Characters

This paper has been written by two doctoral students who are in the final year of their studies, and have spent much of the past three years exploring and applying ethnographic methods. The primary author, an ethnographer by practice and training, conducted all the interviews, transcribed two of the interviews, and also led the analysis. The secondary author, a computer scientist by practice and training, transcribed three of the interviews, participated in the analysis, and helped to write this paper.

In the spirit of openness, we consider our interviewees main characters in this discussion; our narrative would have been incredibly weak without their thoughtful and thought-provoking participation. Our interviewees included a senior academic ethnomethodologist, an industry-based senior ethnographer, a design anthropologist, an ethnography-adopting film maker, and a philosopher using ethnographic methods in his research on primary school education.

Beyond our conversations with our fellow main characters, we have had countless conversations at formal workshops, conferences, and colloquiums with other academics. We have also had many informal, offline discussions with friends and colleagues (at pubs, in library, between meetings, etc.) that have influenced what we present below. The Cumulus community, the EPIC community, and the wider ethnographic community (Ethnography Matters) have also influenced our work directly and indirectly through their blogs, papers, conference calls, and social media posts. We thank them all and hope they will embrace and participate in the open discussion below.

The Open Discussion

Our open discussion is structured around three main questions we would like to discuss: 1. What could open design mean to Ethnography? 2. What are some challenges when applying ethnography in multi-/inter- disciplinary context? 3. What is the future of openly designed ethnography? We address each question by first outlining our interpretations of and responses to the questions before presenting our interviewees' interpretations of and responses to the questions.

We close our open discussion by addressing some of the tensions that arose in our work. Specifically, we address our struggle with articulating if we have discussed open design for ethnography, or open design of ethnography; both for and of carry different connotations, which the Cumulus community, ethnographers and designers should likely discuss. We also discuss some of the tensions that might arise around academic rigour, validity, and authority, a set of issues that our interviewees each struggled with in different ways, and that has persisted in ethnographic academic publications for decades. In keeping with our open discussion format, we offer few clear answers to these issues. Instead of presenting the findings and moving on to the discussion, we have fused the discussion with the findings.

What could open design mean to Ethnography?

Before discussing what open design could mean to ethnography, we first need to explore the concept of "open design" itself. No definition appears to exist, so we have crafted our own. In our minds, open design is a concept with origins in the "open source" computing community. "Open source" traditionally means using publicly shared design information while developing physical products, machines and systems. It includes both free and open-source software (FOSS) as well as open-source hardware. Meyer (2003) has identified several cases of 'collective inventions' that might represent what are now calling 'open design'. These inventions, and perhaps open design itself, involved a form of co-creation where users participated in or even controlled the design of the final product, tool or concept. If we fuse "open source" with Meyer's (2003) concept of "collective inventions", we can speculate on the ethos behind "open design" and say that: open design represents a design that everyone can contribute to, and that the process(es) for making contributions to that design should be accessible to and by everyone.

Of course, our definition of "open design" should not receive any preferential treatment. Every single one of our interviewees stated that they had no idea what 'open design' means, and therefore were unsure of what it could mean to ethnography. One interviewee stated, "it could mean anything. It is so open that I have no idea what it could mean honestly. It could apply to so many things." This sentiment was echoed by another interviewee, who said "I really don't know what open design might mean. All sorts of phrases become popular in our sorts of work, and lots of them don't mean very much." Similarly, a third interviewee vented their frustrations about the use of the term 'open', and emphasised that whatever it 'open design' is. "it should not just mean open to other specialists, but should be open to the people who will be affected by the service and will use it."

These responses highlight a fundamental issue with the phrase 'open design', at least for us and our interviewees: people do not have a clear understanding of what the phrase 'open design' means. As a result, they are quick to dismiss the phrase 'open design', project their own assumptions onto it, or feel like it is just another academic fad. Ultimately, 'what is open design?' is not a question we can fully address in this paper ; we reduced our interviewees' confusion and stress about defining the phrase by explaining our interpretation that the phrase 'open source technology' had inspired our understanding of what 'open design' meant. We also mentioned that we drew on references from computing, and the ethos of open source software, out of necessity because no other definition appeared to exist. With that, nearly all of our interviewees became comfortable offering their own ideas about what 'open design' could mean to ethnography.

One interviewee who has spent years doing ethnography in corporate settings said:

"If I think about the criteria that I would kind of set out: I would pick that openness of transparency. Because part of open source is both about it being free, but also about that contribution back, and building through community, where everyone is invested in it."

[1] we hope that the concept can be clarified at the Cumulus conference by the community.

During a presentation at a conference earlier this year, this interviewee also described an interesting example of how openly designed ethnography might be achieved. In one of the previous companies where the interviewee worked as a senior User Experience Researcher, our interviewee and her team came up with this idea of a process and a toolkit to train employees to collect, record and report their experience in the organisation. Through the use of this process and toolkit, the employees became transformed into ethnographic fieldworkers, with the toolkit offering guidance through the process and providing them with the rigour to ensure that they gathered quality ethnographic data. This example also mirrored how one of our academic interviewees envisioned open design for ethnography:

"If you do an ethnography on something, and somebody else works in that area, and they could read it, and then provide their own data, I think that would be interesting."

This academic ethnographer was familiar with "open source" as a concept through the research experience he gained while working as an ethnographer in a computing department. He noted the advantage and benefit of open source design comes from the process of peer review and collective intelligence. In his own words:

"designing things using open source would be better than the traditional methods because in traditional methods, mistakes aren't easily picked up by single design teams, whereas open source development has many eyes looking at the code and checking it for issues."

While we struggle to pin down what open design could mean to ethnography, the 'impact' of this concept is an aspect that should not to be overlooked. We envision that by opening ethnography up, it means embracing different viewpoints rather than privileging one over the other. As one interviewee put it:

"I have a horrible feeling that what would happen with open design is that you'd have the analyst's view, the academic's view, and they would merely cherry pick amongst the other academics who contribute to open design to support the view that they have. I mean, it'd be nice to point to things that support them, but also nice to point to contributions that contradict what they say. But that's not the nature of academic life, really. Nor does it lead to any better design recommendations."

If these tensions and concerns exist even before "open design" has become a formalised concept, then the Cumulus Community, ethnographers, and designers will need to work together to address them. We need to clarify the ethos behind open design, and explore what it could mean for ethnography. Does it mean that we open up the process of conducting ethnographic research? Or does it mean the ethnographic data itself will be openly shared? Does it mean something else altogether? And how do we navigate the tensions that will arise during the process of 'opening' ethnography. Perhaps we can start to untangle these latter issues by exploring some of the challenges that exist when applying ethnography in multidisciplinary and interdisciplinary contexts.

What are some challenges when applying ethnography in multi-/inter- disciplinary contexts?

Applying ethnography in multi-/inter-disciplinary contexts brings some well documented challenges, in part due to its sociological roots. In the beginning, ethnography was a tool for undertaking social investigations and describing those investigations. Many early "ethnographic studies succeeded in revealing just how regulated, mundane and ordinary were the lives of people" (Button, 2000). Only more recently has ethnography gained "practical goals", like making recommendations for social policy development or offering 'implications for design', a development that has made ethnography "theoretically, methodologically, and politically motivated" (Button, 2000). These motivations--whether they are made explicit or kept implicit--can create challenges for any researcher or research team who must turn their ethnographic insights into recommendations, especially when the work is commissioned by a client or must speak to a specific academic audience. "How do I make my findings relevant?" is a question that every ethnographer-for-hire or ethnographer in multi-/inter-disciplinary team must ask herself or himself; the challenge comes when answering the question, as it can involve selective reading of data and skewing of results. In many ways, this challenge links to another set of challenges that arise when applying ethnography in multi-/interdisciplinary contexts: those associated with establishing skill, value, and authority.

Some people believe that anyone can be an ethnographer (Sharma, 2016) because ethnography relies on a set of skills that most people can learn. However, not everyone possesses the patience, time, or attention to detail required for ethnographic studies. Ethnographic training and experience of conducting ethnographic studies are both important parts of becoming a skilled ethnographer. But colleagues from other disciplines might not recognise the skill of a trained ethnographer, and this can lead to a devaluing of the practice. Because the final output of spending one to two years (or, heck, three months) immersed in a context is often a series of journals about observations and fieldnotes, colleagues from other disciplines (or managers with cost-benefit analysis forms to complete) might not see a value in the expertise offered by ethnographers. There are no easy solutions to this challenge. We've seen ethnography battling for 'value' when being deployed alongside design methods and practices, and so, too, have our interviewees.

One of our ethnography-adopting interviewees suggested that the issue begins with the definition of ethnography itself. He explained, "I think there's a barrier that is entailed in the word of ethnography. It's a quite exclusive and quite an obscure term." This feeling of exclusivity and obscurity might be echoed by anyone who adopts ethnography and integrates it into their own research practices. Of course, it might not be aided by the protective nature of some established ethnographers. One of interviewees, an established ethnographer, lamented the state of ethnography being applied in multi-/interdisciplinary teams, saying:

"If you're an ethnographer, you need to take what you do seriously. You're supposed to be revealing the social nature of work. Of how people go about doing their job. All these other fancy tools, like design fictions and cultural probes, and you know, the postmodern turn, all these, basically, they ignore the data in order to support already established academic positions. The data is a kind of bogus body of dumb data that supports already established theories. For me, that's the opposite of an ethnography."

By dismissing design fictions and cultural probes, this established ethnographer intentionally--or unintentionally--limits opportunities for ethnography to contribute to multidisciplinary or interdisciplinary projects and contexts. In some ways, he dismisses a shift that has already happened within the fields of design and ethnography. The role of ethnography in design has already shifted from 'designers being informed by ethnographers about the "users" they studied in real-life settings' to 'designers being the ethnographers themselves', mixing the real and now with future interventions. Dismissals of that shift might contribute to the exclusivity and obscurity identified by our first interviewee.

As one of our industry-based interviewees noted, "the power of ethnography is that the person who's doing it should be neutral, and trained to observe, and people aren't all that good at observing themselves in a way that's neutral enough." In this vein, another challenge that has been identified by ethnographers working in multidisciplinary and interdisciplinary contexts relates to the fieldwork and data. Fieldwork provides data about the topic at hand, the organisation or location where the fieldwork takes place, and the technology used in the that situated context. However, after that data is gathered, it needs to be analysed, and the process of that analysis matters (Button 2000). As one of our industry-based interviewees stated, "it's one thing to gather ethnographic information, but it's no good if you don't do something with it." This issue was raised during several of our interviews, we have experienced it in our own research, and it has been pointed out in ethnography literature. In Doing Design Ethnography, Caribee et al. (2012) argued that data is meaningless until it is looked through the analytical lens. This analytical requirement becomes particularly challenging in corporate settings, as our interviewees noted. She explained, *"that translation into actionable insights from research like that I think takes a lot of skill."*

Inadequate analysis poses its challenge to ethnography in multidisciplinary and interdisciplinary settings. On the other hand, over-analysis could also jeopardise how ethnography is applied. As one of our interviewees explained,

"everyone says that ethnography is always a betrayal, you are always simplifying, you are always summarising you are alway reducing people's lives into these theories."

Striking the perfect balance between over and under analysing is the trick here, and there are few clear explanations of how to achieve this perfect balance. One of the challenges of applying ethnography in multidisciplinary and interdisciplinary contexts is finding an ethnographer who can strike that balance, without jeopardising the integrity of their work.

Participation has also been seen as one of the challenges facing most of ethnographic practitioners. Getting people to participate in ethnographic studies is one challenge but making sure the study is also valuable and meaningful for the participants is another thing. As our academic ethnographer explained:

"It's difficult to do that... to get that level of support. It'd be really nice. In the work we've done, we've seen how hard it is to get people to participate because there's nothing in it for people. Whereas I'm getting paid, there's lots in it for me, but there's nothing in it for them."

He is not the only one. An industry based ethnographer described ethnography as a "top-down approach", where ethnographers as people who "kind of come in, and study this community; you take from it and you never give it back." This is a challenge for ethnographic practitioners in multidisciplinary, interdisciplinary and traditional/sole-disciplinary projects. One of our interviewees thought that "open design for ethnography" might offer a solution to that problem. As she explained,

"we could justify the spend on the ethnography by bringing the group in working with them on these tools and they had from the very beginning a very strong opinion and ideas of which tools will be useful for them and their lives and how they want to evaluate that."

However, in practice, how much the participants could know about the project and especially the end product also needs to be delicately handled in protection of the "intellectual property".

In summary, our interviewees' perspectives suggest that there are many challenges when applying ethnography , and there might even be unique challenges in academic vs. industry settings. What these two settings share in common is the challenge of maintaining scientific rigour. But the specifics of that challenge vary between academia and industry. Ethnomethodologists (who use ethnography) may be more concerned about the quality of observations due to the fear that people try to 'hide' their data by imposing their own social theory. While in industry, the challenge relates more to job security, credibility, professional value. With all these challenges in mind, we discussed with our participants where lies the future of ethnography, particularly the openly designed ethnography.

What is the future of openly designed ethnography?

We envision the future of openly designed ethnography to be bright, after its initial murky phase of definitional debates. This initial murky phase will likely persist while we, as a community of academics and practitioners, try to establish what 'open design' means, and how it can be applied to ethnography. Whenever we try to introduce a concept (open design) that appears to have emerged and been developed in one discipline (i.e. computing) to another related field (ethnography), we know we cannot simply put them together and hope it works out. Even in the case of these two domains, which have long-term fusions and overlapping goals, they still have their own nuances. What's more, even within ethnography, how it is practiced within academia and industry are divergent. This divergence creates another layer of complexity for the future of openly designed ethnography, but one that we believe the Cumulus community, ethnographers, and designers will embrace wholeheartedly. Our interviewees largely agreed. One expressed her belief that opening up the practice of ethnography would only bring more positive opportunities, since "it has been an upward trajectory" in the past decade. Of course, it might not be an entirely positive journey.

We would be remiss not to return to an issue that caught our attention: the perceived 'risks' of opening up ethnographic data collection. One of those risks relates to the suspicion that ethnographic practitioners and researcher might have about "giving away" the skillset. We touched upon this 'risk' briefly in the previous section when discussing the challenges of adopting ethnography in multidisciplinary and interdisciplinary settings,

and we believe it might resurface as open design for ethnography expands. In the case of our interviewee who created a toolkit and participatory data collecting process in her previous workplace, she mitigated that risk by trusting in the toolkit and process that she developed. The initial fears and suspicions of her ethnographic colleagues ended up being misplaced, and what they found was that the process of opening up ethnographic practices had actually granted the professional ethnographers with increased freedom and capacity to take on the more challenging and demanding tasks that could not simply be done by novices. By acknowledging the skills and expertise needed to set up the open design structure and environment, our interviewee established a supportive and productive process. As 'open design for ethnography' expands, we may need to re-consider how to best recognise skillsets and knowledge of ethnographers.

Another risk for the future of openly designed ethnography relates to data collection. When people follow any data collection process "blindly" , regardless of how many guardrails are in place to maintain the data quality, it is still easy for untrained eyes to miss something and not realise it. We believe this risk can be mitigated by establishing close collaboration between trained ethnographic practitioners, participants, and anyone else who may be involved in the openly design ethnographic research practice. If open design for ethnography is open to mass participation, then the observational expertise and analytical skills of ethnographers combined with the massive data input from participants could be where the merit of this participatory approach to ethnography lies.

Our interviewees had different ideas about where the merits of openly design ethnography might lay. The ethnography adopter we interviewed envisioned ethnography becoming an extended theory of sense-making that could be applied during times of change, or in complex circumstances. He suggested that ethnography is particularly useful for "feeding a coherent identity for how it is valuable to different groups of communities of practice. It's almost like, spreading it out but keeping it reasonably coherent." Another interviewee imagined that the future of open designed ethnography would actually prove to be very rich for many industry settings. In her mind,

"The future [of openly design ethnography], I think, seems to be more valuable to a lot of tech and other kind of companies that are looking for… they are not just looking to optimise the old work but to find new ideas for what to do. For that you need to learn whys and you need to learn details. You can't just learn what and optimise that. I think ethnography as a set of skills can be redeployed in different circumstances and for lots of reasons."

All of these imagined futures carry value, and highlight some of the tensions facing the Cumulus community. How do we balance the tension between sharing the skills and maintaining the rigour of ethnography? Who gets to analyse the data we gather, and how will it be analysed? These fundamental questions about the direction and nature of ethnography in interdisciplinary questions might need to becomes the focus for the Cumulus community, even if that means they temporarily overshadow the main discussion at Cumulus: what is open design for ethnography.

Open design for ethnography, or open design of ethnography?

We set out to explore open design for ethnography, but quickly realised that we were also simultaneously exploring open design of ethnography. We see the two as complementary but separate topics. Open design for ethnography appears to be an open design tool or platform in support of ethnographic practices. Open design of ethnography is more concerned with how to open up ethnography as a research practice and method, making it more accessible and transparent to other disciplines. Throughout our open discussion, what has become clear to us is that these two topics do not necessarily overlap. There can be open design for ethnography, without any need for open design of ethnography. Indeed, it appears as though there might already be "open design of ethnography" examples (see: our interviewee's industry-based shared ethnography tool, or even the long-established Mass Observation Archive), but the list of "open design for ethnography" examples is sparse. We believe the Cumulus community, ethnographers, and designers should discuss if the two can co-exist, and if so, how.

The Closing Act

Our open discussion has highlighted existing tensions between who adopts ethnography, why and how they adopt ethnography, where they apply it (industry vs. academia) and how they analyse the data they collect through ethnography. These tensions surfaced in different ways and carry different implications for the future of openly designed ethnography. But, as our interviews and the academic literature indicates, these tensions are not new (Button, 2002; Caribee et al., 2012); they've been reflected in challenges for applying ethnography 'elsewhere', and they've also been expressed as concerns for a more openly designed ethnography. So where does this leave us? This paper and open discussion suggests that we need to have an open mind about people adopting ethnography, but we also need to be clear about what about ethnography is, what it is not, what it can do, and what it can not.

In the call for submissions, the track chairs posed a question: what will be the impact for this if design and production are further opened? We close our paper by unpacking this question into a few smaller questions: What impact? Impact for whom? Further opened how? Our experiences, and our conversations with our interviewees, suggested that these questions will carry unique tensions in every project. And that we might need to have patience and compassion with each other while we negotiate the answers to those question. So what if ethnography is more open? How would more openly designed ethnography impact design and production? Perhaps it's best we leave those questions to the people they impact most, once we have a clearer idea of what openly designed ethnography is and the what sort of politics its carries with it.

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‘Open narratives’: narrative as collaborative co-creation through collective cultural memory

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ABSTRACT

Narrative ethnography is a testimonial of accumulated knowledge, narrated as a subjective personal experience for an interpretative audience, built on the format of storytelling. Recently, the digital paradigm has enabled the narrative to extend as a collaborative exercise where the digital media acts as a mediator of the narrative. This article is an attempt to develop a new form of narrative structure, evolved through collaborative dialogue between the community. The digital media acts as a trigger for narration based on memory ultimately generating a collectively constructed story as opposed to the traditional notion of narrative being constructed by a teller for a reader. Developing on the theory of collective cultural memory of Jan Assman (1995), the narrative is created within a community as a collaborative co-creation. We begin with generating an autoethnographic first person narrative content using digital media e.g. images /video, which acts as a mnemonic device, triggering the narrative dialogue. The narrative is thus generated in a workshop format, where the images are displayed on the screen and the community refers to them while they narrate memories. The collaborative exercise allows addition, correction and validation to the narration. This paper discusses a narrative we recently conducted in a rapidly changing urban space within India. Our aim of conducting this ethnographic research was to understand the evolution of place by developing a system of digital mapping. ‘Open narratives’ is a step towards developing the framework of such a digital tool.

Keywords

narrative ethnography, collective cultural memory, digital mapping

‘Open Narrative’ of a Place

An architectural place can be seen as the character of a space, shaped by the interactions of a community with the space. Understanding these interaction events can help us decipher the character of a place. The domain of narrative ethnography provides a strong foundation for recording and analysing events hidden in lucid narrations. Research has established that a story is built over a series of events and the narrative is a way of telling the story (Schank 1995, Brooks 1997). Edward Branigan defines narrative and narration as a perceptual activity that organises data in a pattern to communicate past experience (Branigan 1992). Experience narrated as a first person account built on the format of storytelling is an authentic testimonial of past events. While understanding place as a community construct it is essential to extend the idea of narration to a collective exercise where the community can be seen as a body that builds a collective narrative through collaborative effort. Extending the traditional notion of storytelling where the story is told by a teller to a listener, the collaborative narrative is a new format where the members of a community narrate their past experiences (meaning events) simultaneously and build the story through a dialogue. We call these narratives as ‘Open narratives’ as they suggest open participation and collaborative effort.

This paper presents such a case of an open narrative conducted in a workshop format and attempts to analyse its content. The framework of this collective narrative workshop is based on Jan Assman’s theory of collective cultural memory (Assman and Czaplicka, 1995). Assman argues that cultural memory is invariably collective in nature and it is the building block of a society. He defines cultural memory as a collective knowledge of the community instrumental in developing its character. A narrative referring to a historical place will be built on the basis of such a memory. Assman’s elaborate descriptions about the characteristics of cultural memory helped us to formulate the workshop and its analyses. The workshop was organised with the help of the community and was conducted in and about a place called Tapal naka.

‘Tapal Naka’ as a Place

Tapal naka is a bazaar square in Panvel, which is now a suburb of Navi Mumbai. Panvel was a port city and an administrative head of a hundred and sixty five villages which were rich resources of fishing and paddy farming. Panvel has three hundred years of history as a market place. Before Mumbai became a prominent market, Panvel port served as the only connection to the Deccan plateau via a mountain pass called Bor Ghat. The port was very well connected to ports of Gujarat and south India. Trade brought merchants to Panvel, from far away places of north and south. Today, the port has stopped functioning and the bazaar has changed from a wholesale market to a retail market. Panvel has found itself as an easternmost suburb of Mumbai Metropolitan Region.

Tapal naka is a street square on the oldest street named Mahatma Gandhi Road. Previously known as Mumbai-Karjat Highway and before that Agra Highway. This is the road that connects all villages under Panvel Tehsil (administrative region) to Panvel. The other road intersecting Mahatma Gandhi road at Tapal naka comes from Uran another major port town in south. Uran road connects sixty three villages to Panvel. Because of this connectivity Tapal naka became the most important junction, heart of all market activities. Within hundred meters distance from the square, there is a two hundred and fifty years old Synagogue, a mosque belonging to Shia Muslims, a mosque belonging to Sunni Muslims, a tomb of a Sufi saint, and a temple of three important Hindu gods. Recently a statue of a famous King, Shivaji has been established. Apart from the religious structures, there is a water tank, which used to serve this locality and people coming to bazaar. A bustling vegetable market sits right on the square.

About seventeen different ethnic communities live together on this square, sustaining the change in market dynamic over the years and maintaining its importance. There is an intense community bonding between them even though they belong to varied religions and caste systems. This is evident in the intercaste and inter-religious marriages within the merchant community as well as others. In most cases more than eight generations of a family have resided in this place. The family of one of the authors of this paper has also resided on this square for last five generations, which makes this research autoethnographic. It availed unconditional access to the community and the place.

‘Open Narrative’ as an Aid to Digital Mapping of Place

The collaborative co-created narrative gives clues as to how the space facilitates evolution of events and ultimately place. The space is embedded with these stories in the form of cultural formations, mutating itself, accommodating and reflecting them in its character. The narrative is not detached from the physical entities of place, rather it is embedded within it. Manifestation of narrative story, firstly in language and later in text, is as vivid as the physical configuration. We can visualise the narrative as another cultural formation layered on the space just like any other interactive event giving rise to the notion of place. The collaborative effort of building a narrative is synchronous with building a space or painting it with color, giving it meaning through deliberate choice. This phenomena of layering information and contributing to a continuous process of evolution is best visualised and documented through the process of mapping.

Mapping narratives on the physical configuration as a collaborative exercise can be achieved by developing a digital mapping tool. ‘Ima-note’ is an online multi-user tool developed by Media Lab, Aalto University. It allows collaborative mapping where multiple users can simultaneously upload images and personalised annotations layered on a digital image. We can start by using ‘Ima-note’ and develop it further to weave narratives in the physical fabric of the space. Open-narratives as prescribed and analysed in this paper is a step closer to developing this framework. We are building various 2D and 3D visualisations of Tapal naka, while simultaneously conducting the workshops and hope to integrate both. Assman’s collective cultural memory provide strong markers which can be used as definite parameters for developing the tool.

Collective Cultural Memory

Jan Assman describes cultural memory as a collective concept of acquired knowledge built on the experiences of an interactive society. By combining Maurice Halbwachs’ concept of collective memory (Halbwachs, 1992) and Aby Warberg’s cultural memory (Forster, 1976), Assman proposes collective cultural memory to understand the function of a society. According to him people preserve their memory by using objectivised culture e. g. texts, monuments, paintings and so on. These cultural artifacts become part of the value system through cultural processes. His framework emphasises the importance of cultural artifacts which are used as vehicles of preserving and transferring cultural memory. Assman refers to these artifacts as figures of memory, in other words they are mnemonic devices. In essence, cultural memory is the knowledge which the community progressively processes to ascertain its constitution. For our purpose here, we can use the concept of collective cultural memory as a tool to evaluate place as it is conceived by the community. A place can be seen as a cultural formation of an architectural space. Bernard Tschumi explains it as a formation derived by layered interactive events ultimately preserved in memory (Tschumi, 1996). We can say that cultural formation of a place is a collective construction by community, preserved in their cultural memory. Assman discusses six characteristics of cultural memory in detail, which help us to understand its character.

- **Concretion of Identity:** Cultural memory as a knowledge base from where a community derives its identity.
- **Capacity to reconstruct:** Cultural memory as a contemporised past. It is remembered and reconstructed always with reference to the contemporary world.
- **Formation:** Cultural memory is preserved and enhanced through cultural formation, which is in the form of cultural artifacts.
- **Organisation:** Cultural memory depends on collective practice of the community and on the norms that bind the practice together.
- **Obligation:** Cultural memory is a vehicle of preserving the value system of a collective identity.
- **Reflexive:** Cultural memory is self reflexive. Communities alter and enhance their self image through cultural memory.

These characteristics of the cultural memory and its collective bearing provide a strong basis for analysing a collaborative narrative. The format of ‘open narratives’ workshop and the development of the mapping tool are based on this framework. The narrative is developed in five stages: first, where the mnemonic device was created by documenting the architectural space; second, when the workshop was organised with the community; third, when the event of the workshop took place; fourth, when



Figure 1. Street elevations as Mnemonic Device

recording of the narrative was studied, videos were transcribed and compiled into a single video and fifth, when the narrative was analysed taking reference from Assman's characteristics of cultural memory. We discuss this process in detail as follows.

The Narrative Workshop

The street elevation as a mnemonic device

The first step was to generate an autoethnographic account of the place. We have been conducting various observations, most importantly, photo documenting the buildings that are dominant elements of the architectural space. We restricted ourselves to a specific area around the square to conduct the workshop. It was decided to take a stretch of hundred meters in each direction of the square as an area under consideration. Our focus was obviously on the square itself. A stretch of hundred meters covered almost all important structures and communities. We photographed all structures of this stretch capturing their building elevation and created a continuous image of the street elevation.

During the workshop, we could use these images of street elevations as mnemonic device. We projected the images on a wall so that they were visible to everyone. We had eight images of eight street elevations, depicting two sides of each road. We navigated through the length of each image from our computer. All the participant of the workshop had their building on one of these images. They were shown to the participants in detail, to make them aware of the scope. Whenever a participant wanted to share a memory he requested to bring a particular image up on the screen, sometimes it was his own building or sometimes it was other important structure. The images are called mnemonic device because they helped in triggering memories. They also acted as references where an alteration of space because of past or a contemporary event could be pointed out and then cross checked or enhanced as a collaborative effort.

Organising the event

The second stage was to organise the workshop. We started to approach people and discuss the idea of the workshop. To begin with we approached the merchant community, who own most of the buildings and do business on Tapal naka. They have a dominant presence and have played a crucial part in developing its identity. Traditionally in a bazaar like this men handle most of the business. They work in the shops and it is hard to find a woman sitting in a shop doing business. The women though come from either equally rich or rather richer families. They have equal decision powers and they do take part in financial management. This lead to a workshop where all participants were male.

We approached Mr. Ashok Gilda, who is a president of the Lions Club. Lions club in Panvel mostly comprises of businessmen and professionals. It is a recent social platform. Most of the prominent businessmen are part of one or the other such community service initiatives. Though, we realised that in this bazaar it does not matter much to which one you belong, as here on Tapal naka business is the larger organisation, binding everyone together. We introduced the workshop to Mr. Gilda he suggested that he would like to host it at his home, which is very much accessible to everyone. He gave us a list of sixteen participants, representing different communities, all prominent businessmen having business on Tapal naka. We added a few names of people who reside on Tapal naka but are not doing business and some who now stay away but have a very important connection. We wanted a small number to start with the workshop, but Mr. Gilda was so clear about who all has to come that it became very difficult for us to control it. He proactively came with us to invite each participant personally.

The workshop

Mr. Gilda's living room could accommodate fifteen people. The 'U' shaped seating allowed us to locate ourselves and the equipment precisely. We projected the images such that they can be easily seen by all. Four students of an architectural school assisted us in the workshop. A multi track audio recorder was hand held by one of the student and two other students were recording video by mounting cameras on tripod. One student was taking pictures while ringing a bell to keep time slots. The screen was navigated by us from a computer and was simultaneously recorded by using a screen cast software named KAZAM. The participants were seated on the 'U' shaped seating arrangement and we sat on a small stool, making sure that we were visible.

Eleven participants arrived sharp at 4 pm. We began by introducing ourselves followed by a brief of our research on Tapal naka as a place. The importance of a collaborative narrative as well as the contribution to our research was explained. A format of how we plan to conduct the workshop was discussed and all of them agreed to it. As all of them were very enthusiastic about talking and sharing their memories, we had to restrict them to a formal format. Each participant was given three minutes to talk about either a random memory of Tapal naka or a specific memory related to a structure. The three-minutes-each format helped a lot in a clear and peaceful recording. We navigated the images of the buildings back and forth on screen as per the participant's suggestion while they narrated memories. The first round lasted for one and a half hour and then we threw the session open for informal talk.



Figure 2. Setting up of Mr. Gilda's home for the workshop



Figure 3. The workshop

Organising and analysing the data collected

The workshop had two parts, first where the participant shared a personal account and the second where they all shared common memories in an informal talk. All participants chose to speak in Marathi, the local language, even though it was a mother tongue of only two participants. We compiled one single video of the entire event and analysed it by first taking notes and then transcribing it in Subtitler, a software for overlaying subtitles. The transcribed content of the video and the video itself are two strong data sets to be later used in the research. We have been making small video clips of the video and circulating them within the community to make them aware of our research and their contribution.

The narrative began with Mr. Maniyar who is an eighty year old

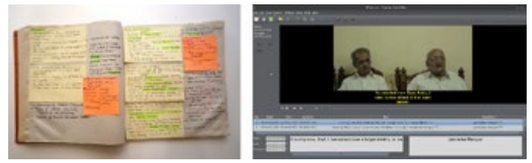


Figure4. Studying the video

businessman. Referring to our images on screen, he said that our choice of the stretch selected for the workshop was accurate and initially the bazaar was exactly this much. He remembered that Panvel was the number one bazaar in Raigad district. It had about forty rice mills and all farmers came with paddy laid on bullock carts for husking rice. He remembered that in front of the Union Hotel, there was a bus stop and he used to take a bus to Pen. Mr. Maniyar concluded by stressing on how all communities here have stayed together, without any conflict. His precise description of what the place was with the hints of contemporary situation, became the basis for others to add and alter.

The common discussion was more conversational. During this session, they chose to speak about events like flood of 2005 which devastated Tapal naka and all of them suffered huge losses. The narration was focused on how they all came together and approached the government for compensation and how they were successful in the end. The common session was more focused on events in which they could refer to each other, in a dialog. We analysed the complete narrative based on Jan Assman's six aspects of cultural memory. We present the analysis in three stages, first explaining the aspect and its relation, second what we observed in the narrative and third the compilation of the actual narrative.

Analysing the 'Open Narrative'

Concretion of Identity

Theory: For Assman, community preserves knowledge about its peculiarity and unity through cultural memory. With this he points out that a community uses cultural memory as a means for developing identity, by deriving who they are and who they are not.

Observation: Tapal naka is the heart of business activity, businessmen aspired to remain close to this place of prominence. The typology of buildings where shops are coupled with a residence on the first floor allowed intense communal bonding. It did not remain a place for work but a place where you grow in terms of age and aspirations with others. All participants chose to speak on this issue towards the end of their personal account and while doing so they pointed out to the earlier speaker and appreciated him for talking about it.

Narrative: The narration began with Mr. Maniyar. After a brief talk on the nature of the bazaar, he concluded by stressing on how the bazaar always had variety of communities and how they have over generations lived harmoniously with each other. On this statement all participants nodded positively. He further stressed that we all have to live as harmoniously as ever. Mr. Panhale added to this later by sharing a memory of how Jews and Telis have lived together. He added further that all Telis believe in the Sufi tradition of Islam and that the tomb of saint Sili Badshah on Tapal naka is under their care.

Capacity to Reconstruct

Theory: According to Assman, cultural memory reconstructs the past in a contemporary context. People tend to appropriate, criticise and upgrade memory in relation to contemporary situation.

Observation: Most of the structures on Tapal naka have been altered for different use, as was the need of time. There have been events like change in ownership, change in market condition, floods, fire, political interference, addition of alternative transport facilities, closure of the port and so on. The Union Special Hotel on Tapal naka is very famous and was referred to many times in the narration. Many unknown aspects about it were shared surprising its owner.

Narration: Mr. Maniyar mentioned the Union Special Hotel, sharing a very personal memory of how he used to go to Pen, taking a bus from the hotel. He pointed out on the image that there was a bus stop just outside the hotel. We asked him who ran the bus service, which he didn't know. At this point everybody jumped into conversation and we all came to know that the first bus was run by Mr. Sorabji, a Parsi businessman and Mr. Juekar started it later. Mr. Digodkar pointed out that Mr. Isaac, a Jew, used to run a bus from here as well. But it was Mr. Thakkar who could finally bring clarity. He owned the property in which Union Special Hotel is located and had precise details. He told us that a person named Mr. Padhye used to live where the hotel is now and owned Union Transport Company, which used to run buses towards south. In this company, Mr. Khalde's grandfather used to sell tickets and hence he was called Khalde master. Mr.Thakkar also pointed out that it was Mr. Padhye who asked Khalde master to start selling snacks and tea. Slowly the transport company ran out of business as the state run buses provided the service. Khalde master eventually started a large scale hotel which is now called the Union Special Hotel. This story surprised Mr. Khalde.

Formation

Theory: Cultural memory is preserved through cultural formation which is the objectification of the collective knowledge e. g. texts, images, monuments. People give concrete forms to cultural memory, crystallising them as cultural artifacts.

Observation: Tapal naka being the center of business acitivity, became an ideal location for establishing a political platform. It is here that Mr. Gulve, who was a head of the municipal council in the late 19th century, decided to build a water tank to avail drinking water facility for the visitors and the residents of the bazaar. It was an act of philanthropy by a rich landlord and a non-political leader. Mr. Bohra donated his land for the purpose. Post independence, the new political leaders saw the potential of the square as a platform from where all political campaigns can begin. They established a statue of local prominent king in the 17th century, Shivaji and set a trend of starting all political campaigns from here.

Narration: Mr. Shelkar shared a memory regarding the establishment of Shivaji's statue and how it became a prominent monument. A famous political leader initiated the trend of starting political campaigns from here and then it has been followed by everybody. Mr. Bohra added to this by saying that it was his land before and now with the establishment of the statue it has become a place of political importance. Mr.Thakkar added later that the statue actually sits on a very old water tank. Panvel has many such water tanks as there was scarcity of water in the town. All the visitors of the bazaar and people living near used to fill water from the tank.

Organisation

Theory: Cultural memory always depends on a specialised common practice of the community. The practice itself is an organisation, with distinct communicative patterns, preserved in memory, establishing a strong social system. Assman shares the idea of 'semantic cultivation' proposed by Niklas Luhman (Besio, C., Pronzini, A., 2010), where a practice cultivates meaning in a system through communicative symbols.

Observation: People on Tapal naka have remained in business by adopting and accommodating new constraints or opportunities. They have done business with each other and have shared common services. The business keeps them in an ethical framework which is strictly followed. They have a personal memory of who sold property to whom, when and at what cost. The community becomes a larger organisation, built for its own protection and progress. This collective knowledge is preserved in the cultural memory.

Narration: Mr. Maniyar shared a memory of the importance of Panvel as a market place for surrounding villages. There were about forty rice mills and farmers would buy other daily needs in exchange of rice. Mr. Karwa later specified all details of it as his family has done extensive business in rice and salt trade. Mr. Bohra and Mr. Saifuddin added that they have supplied mangalore tiles too far away villages and people used to pay advance money to buy them. Mr. Digodkar pointed out that his family owned a saw mill and he has supplied wood to most of the houses. Mr. Thakkar knows every detail of the property ownership on Tapal naka.

Obligation

Theory: Cultural memory is preserved through a system of values. The community differentiates things in importance, by distinguishing between itself and others. The characteristic self-image of the community is carefully built by a prescriptive value framework; cultural memory is a vehicle of this knowledge.

Observation: The community on Tapal naka is strongly knit, while maintaining preferred attachments within selective sub groups. Teli community specially shows a strong connection with Jews and Sufism in Islam. They are biased with this connection and choose to keep others a bit at bay. The Jewish community had a large role to play in terms of business on Tapal naka. Most of them chose to migrate to Israel leaving only a handful of families behind. The ones that are left behind remain seclusive. Bohras (Shia Muslims) also are a very tight community with its hidden borders. Despite of this communal self-image that is visibly seen, there have been many mixed marriages across these communities.

Narration: Mr. Panhale comes from Teli community. They owned oil mills and so did the Jews. Mr. Panhale shared a memory that Telis and Jews came first to this particular place and were in large numbers. The idol of Shani and Maruti in the Shani temple on Tapal naka have been established by the Telis and Jews. He said, this act speaks about their unity and attachment. The Jews in this part of the coastal region of India have been known as Shanvar Teli, which refers to Teli caste and god Shani. He said that the Synagogue is the first religious place and then came the temple and then the mosque. Mr. Digodkar is Jewish and in his narration he completely ignored the statements of Mr. Panhale and did not even mention Shani temple. He chose to talk about the Jewish community and its valuable contribution to Panvel and in India.

Reflexive

Theory: Cultural memory is self-reflexive. Communities criticise, control and alter their self image through cultural memory. It is also practice-reflexive, as it preserves the older practice into newer forms and adjusts itself with time.

Observation: To do trade on a daily basis is not easy. One has to be sensitive to what people expect and what they can afford. What you can offer in the present circumstances makes you a good businessman. That seems to be the strategy of these businessmen on Tapal naka. There is no flamboyance to their behaviour. They are concerned for their growth but are ready to compromise for the benefit of their long term client, in this case a simple farmer. The ancestors of the now settled community have struggled to establish their business and have passed on the memory of hard times, not only for them but for the clients to whom they served.

Narration: Mr. Shelkar shared a memory from his father time when the daily wages were as cheap as quarter of a rupee. Mr. Saifuddin also pointed out that he sold a cement bag of fifty kilograms in twenty rupees. They mentioned that all these prices seem ridiculous and criticised how everything has become expensive now. Mr. Digodkar narrated a very interesting story of Mr. Isaac, who had a bus service to Mumbai. He used to charge twelve paise to go to Mumbai and if you paid three paise more he would pick you up from your house.

Discussion

The narrative developed as a collaborative exercise is an external process, where the cultural memory of a community is accessed. We call this narrative process external because it is a collective of co-narrated memories. It is a workshop format based on the participatory design methodology. Its inherent character of a collective generated through cross-referencing of the memories in a progressive dialogue helps in constructing a thicker narrative. The analysis reflects that a collective narrative can provide insights into the intricacies of a community, a knowledge, which otherwise would be very difficult to access. It can reveal surprising information that even the community is not aware of. Our analysis of the narrative provided us information, not only about their relation to Tapal naka but also about business, family structures, property ownership, religious connections, political interference and many more. All these issues are of concern to design research. This narrative is an ethnographic investigation giving concrete answers to the research question and building a stable path towards its solution. It also contributes to design research through its specificity as a focused research method designed to investigate an architectural place.

The format of the narrative was focused on understanding how the community on Tapal naka perceives it as a place. The place came across dominantly in the narrative, elaborating its conceptual location as an inseparable whole, of which the community is a part. The narrative constructed as a collective co-creation can be layered as a cultural artifact on a physical representation of space, in our case Tapal naka. These narratives can be progressive in nature and will provide valuable clues to understand place evolution. The mapping tool can make use of the parameters discussed above can be seen as elements to be mapped while layering the narrative.

The domain of digital narratives is a promising field of research, where the digital media aids the narration by availing interactivity and the possibility of generating an artifact for analysis in design research. In this format of narrative, it is used both as a trigger as well as an archive of the event. Paul Mulholand has shown in his research on narratives related to heritage context, how the interactive dimension of digital media helps to build on the relative and representational character of narratives (Mulholand et. al. 2002). Similarly, Daragh Byrne talks about life-logging practices with the help of new digital media and equipment, where the narratives are generated for self assessment (Byrne et. al 2008). These examples are focused on the narrative as an internal process, where a person tells his story with the help of a digital media. Marcus Foth on the other hand comes close to the community dynamic when he introduces narratives as stories with location markers on a community map (Foth et. al 2008). Here as well the stories are posted by individuals, for an audience with the purpose of triggering community networking and awareness. With 'Open narratives' we go a step beyond by extending the narrative to the collective co-creation where the digital media is first used as a trigger and an inseparable part of the narrative itself and later a constructive element in the mapping tool. The mapping tool with the layered 'open narratives' can possibly provide constructive insights in understanding evolution of an architectural place.

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Visualising ourselves through artifacts and experience

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ABSTRACT

This essay explores the role of art and design in the development of ethnography as instrument for visualisation. A two-stage collaborative autoethnography method in which personal histories in the form of 'reconstructions of life' created by young researchers from an artifact-oriented perspective, are used as point of origin to launch a process of inquiry. The process includes the subsequent use of interviews by a second researcher as a way to gather additional information and further refine the narrative created by the informant author, with the intent to use the data collected in the creation of a personal timeline visualisations. The objectives are: To describe how the personal narratives created in the first stage of the method and involving the use of single or multiple events and artifacts can help to illustrate diverse cultural zones of transverse by people throughout the course of a lifetime; to demonstrate how media representations are used in the translation and recording of intangible and ephemeral multimodal experiences of lifetime memories.

Examples from a workshop developed and taught by the author in diverse cultural settings are provided. Self-reflection is included as participants are asked to create narratives based on significant events of their life and anchored in personal recollections involving material culture, instances, and landscapes. During the second stage a dialogical process interrogates basic notions such as 'What is a primary source?' and 'Who is an expert?' emerges

Keywords

artifact, autoethnography, visualisation

1. INTRODUCTION

This paper explores the possible role of art and design in the further development of autoethnography, as an instrument for research and visualisation. This is done by describing a two-stage collaborative autoethnography method that we have been developing at Aalto University in which personal histories in the form of 'reconstructions of life' are used by young researchers as point of origin from which to launch a process of inquiry. Initially the method was developed as part of a course in which participants would learn about the processes involved in collecting and organizing data to create information visualisations. These latter are graphic information representations that by engaging the human senses and perception actively promote exploration and engagement with memories.

However I aim to show that the processes which students undergo as part of the work in the course and the data resulting from these artistic and design visualisations potentially yield much more. According to anecdotal testimony, participation has impacted those who have partaken in the course. This has resulted in several invitations to offer the workshop in different locations such as at Universidad de Barcelona (UB), Spain in 2006, Pontificia Universidad Católica de Chile (PUAC) in Santiago, Chile in 2009 and at the School of Media Arts at Tsinghua University in Beijing, China in 2009. It is the works produced by these three workshop groups that I use as source materials for this paper. I contend that among other things these information representations illustrate diverse cultural zones traversed by an individual throughout the course of a lifetime. This is evident for example, in the visual and textual signs depicted in Figure 2 where cultural elements such as Chinese aforisms and symbols are used to describe stages of life. Further on and using the metaphor of attractor fields, Figure 3 shows us how the author's taste in literature has varied throughout time. And in Figure 1 we have an example in which the designer has used the popular Spanish board game of La Oca as form-giving schema to visually represent the autoethnographic narrative of the life of Laura Rosetti.

Because of the knowledge it offers, contemporary anthropological thinking provides a solid foundation for designers and artists working in areas such as human computer interaction, interaction design and user interface design. Could it also work the other way around? Aside from being the subject of study, can design research, art, and design knowledge with its rich, yet precise use of graphics, also make a contribution to anthropological debate?



Figure 1. “Laura Rosetti Lifegame”, personal timeline based on the popular Spanish board game of La Oca. Numbers in the upper right hand corner of each step indicate the passage of time. Colors are used to indicate different themes with green representing travel, white affective relations, yellow information technology, and red traditional audio-visual media.

2. Background and Framework

In the paper I first describe the background and framework in which the work has developed and then I proceed to describe the elements of the method as they are taught in the workshop. Throughout the text I show and compare a small selection (four graphics) from the materials produced in three different editions of the course. My analysis is done by looking at narratives and visualisations produced as they stand by themselves. A more comprehensive comparison including a larger sample of materials and engaging with other autoethnographic studies is planned for the future. Diverse notions of contact zones with hypotheses of how they come to be and how they are used in the work will also be discussed here.

2.1 Design Studies

In 2003, after successfully conducting a pilot project on the topic, together with designer and lecturer Asta Raami, we developed Dynamic Visual Design a special subject area of study offered at the Media Lab Helsinki. The aim was to provide an understanding of the field of visualization as one that involves dynamic processes that are of a biological as well as of a social and cultural nature. This is in agreement with Raskin who has proposed that it is the responsibility of the designer to know and understand the capabilities and limitations of the human senses, how these changes in response to variables such as age and health, and how human emotional responses are affected by culture.

The area of study that has since been renamed to Dynamic Visualisation continues to operate successfully. It includes a yearly seminar devoted to theory and practice, workshops in which the objective is to focus on improvement of skills such as Interface Prototype Design as well, as courses targeted to specific subjects such as 3D User Interface Design and Advanced Topics in Visualisation. However, the intent of this essay is not to go over the details of the program of study but rather to focus on the direct and indirect results from the work done throughout the years in one of the courses, namely Information Visualisation and Design.

Initially this course was a one-week long workshop focusing on improvement of information design skills. However, based on student feedback it has been extended to a three weeks intensive course, with the section on information design and narrative now being offered during the second week. In this section as part of a Personal Timelines exercise participants are asked to write a two-page description of their life from their earliest memories until the present. They are asked to include significant names of people and events. They should also aim to organise these memories by reflecting about the settings and places in which the events occurred and the significant objects of material culture that might have been present or played a role. Though touching on emotional and inspiring issues is supported, participants are strongly advised not to include items that are either too personal or that they would not freely discuss in public.

Lectures on the topics of History of Information Design, on Jacques Bertin’s Graphic System and about Time Systems in the West are given concurrent with their work on these narratives. Time is presented from a historiographic perspective as a system that uses diverse metrics (day, night, week, month, year)[1], some which might have changed through history and which still vary across cultures and others which are of a natural order (sunrise, sunset, seasons). Students are asked to reflect and correlate their own experiences to these topics.

The graphic system semiology developed by Jacques Bertin is introduced as an example of the rigourous use of graphics and in order to familiarise participants with the use monosemic and polysemic sign systems. Monosemic systems are precision-oriented graphic design systems in which the elements can only be interpreted in one way. An good example of a monosemic system is the schematic diagram used in the London Underground transportation system where vectors and circles in different colors are unequivocally read as transit lines and stations respectively. In general most artworks can be considered as polysemic systems, that is open systems from which multiple interpretations can be inferred. Finally the lecture on information design history exposes the participant to a wide diversity of information representation formats, including knowledge about their authors and the historical context in which they were created. This provides foundation knowledge and also helps to establish a common language among participants. When creating the Personal Timelines articipants are allowed to use combinations of all these types, or come up with their own proposals.

The decision to use personal data to work on information design came early on. Although a wide variety of data is now available through the Internet, this was not the case yet in 2003 when we faced the dilemma of what could we use for the practical exercises that would be substantial and viable. In the discussions at the time with graphic design professor Tapio Vapaasalo, we debated about the possible effects of using personal data. Since it was clear that the participants in the workshop would come from different knowledge fields, backgrounds and even nationalities, we conjectured that these differences might make it so that everyone would have a distinct story of their life and that this would create a potentially limitless diversity of data elements.

Giving the students the opportunity to narrate and perform the story of their life could also have the positive effects of learning and practicing basic presentation skills as well as possibly creating an enhanced sense of communication among the participants in the group. As I brought up the questions regarding the objectivity of the data, Vapasaalo suggested that one way around this would be to have the students work in pairs, with one being the storyteller and the other being the researcher. The idea here was that such working relationship offered the opportunity of having ‘checks’ in the system. The storyteller would need to make sure that at least one person could understand their narrative and the researcher would need to make sure that there would be enough relevant information to create the Personal Timeline information representation.

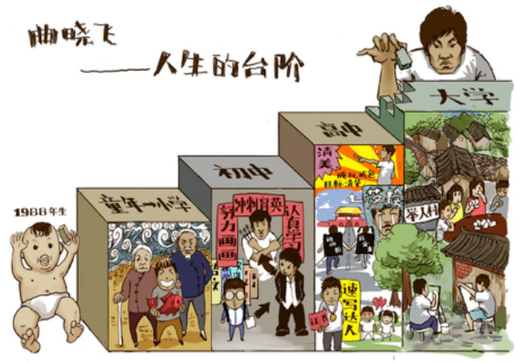


Figure 2. Timeline representation from autoethnographic narrative “Staircases in Life”, depicts stages resulting from epiphanies and life altering moments: From birth to childhood spent with grandparents, through junior high studying hard, to failure resulting in a decision to aim high to winning a certificate for best quick sketch, and finally into university life and working with fellow students.

3. The Method: Role-playing, Narratives and Graphics

The method that we have developed is collaborative and combines role-playing as a strategy for storytelling and graphics as a way of inscribing aspects of the stories told.

3.1 Roles: A Storyteller And A Researcher

Our collaborative autoethnographic method involves working in pair and according to the following roles. There is a storyteller who focuses on creating an autobiographical narrative, paying particular attention to how personal events intertwine with events such as historical milestones, human relations and material culture (or artifacts). In the narrative the storyteller should provide rich descriptions that allow for rendering of vignettes based on real life experiences. The narrative should also offer anchor points of dramatic tension in the form of epiphanies, or “stings of memory” (Denzin). Epiphanies are found in the significant events that have the capacity to alter the course of a life. They locate the turning moments (the beginnings and the endings) and carry with them evidence in the flesh (of the sounds heard, the smells felt and the colors noticed, for example).

We emphasise the importance of the language used and on giving the autobiographical narrative a meaningful title. This is because even though it is an external element (Bertin) , the name of a graphic can operate as a linguistic form of memory, evoking and linking places, events and people. The name can also act as a magnifying glass, placing emphasis on certain aspects of an event or experience, while ignoring others. Overall the experience has been that, even when there are problems with English as a second language, the narratives produced are crafted with care, thus allowing for a translation or even a visual reconstruction of the lived experience.

The researcher who is also the designer who creates the graphic has the responsibility to find additional information, if after an initial review he or she deems it necessary. Carrying on interviews with the storyteller is one way for the researcher to do this. Doing a survey of the material culture mentioned in the narrative such as computer games or musical styles is still another. It could be argued that the design researcher focuses on the objectification (achieving objectivity) in the narrative. Ultimately this occurs through the interpretations created by this external subject, who in dialogue with the storyteller decides what to include (or not) in the final Personal Timeline, as well as how to depict it.

Interpretation is related to our ability to understand and reflect about something, an activity, an event, or an item of knowledge. To interpret means to explain something to our selves and to others. In relation to communication, there is a social aspect to interpretation so that it benefits from the existence of dialogue. At the end of the exercise, all participants have performed both roles that of storyteller and of researcher. Each takes home their own life’s story written by themselves and rendered into a timeline graphic by one of their colleagues. The graphic is significant in how it allows to grasp a life in its entirety.

3.2. Autobiographical Narratives and Stories

Narratives and stories are increasingly regarded as primary sources and carriers of knowledge. Anthropological literature is replete with examples where narratives told as stories are instrumental to the transmission of mythical and traditional knowledge accross generations. Thus narratives can be considered as central to creating meaning and understanding related to concepts like identity (who I am and where I come from) as well as notions such as difference and cultural diversity (why am I here).

All narrative consists of a “discourse that integrates a sequence of events into the unity of a single plot” (Onega and Landa, 1996: 63). This means that otherwise disconnected experiences are brought together and linked as contiguous elements within the semantic space of a plot. Nevertheless in this space stories do not necessarily unfold in parallel to the chronological ordering of events. As is illustrated in the timeline depicted in Figure 3, narratives can shift back and forth altering the presentation of events in time and even recasting the perspectives offered in scale and thematically.

Indeed there are those who argue for a difference between narrative and story, with the later being associated with actual events or performance and the former having to do with inquiry, interpretation, and discourse creation (Mulholland et al. 2016). Marie-Laurie Ryan has proposed that “narrative representation consists of a

[1] An invited professor of history teaches the topic of Time Systems in the course. The lectures on semiology of graphics and on history of information representation graphic have been taught by the author.

[2] Bertin proposes that as external elements independent of the graphic image itself, the title and legend materials serve the function of properly identifying the domain of knowledge treated by the information representation.

world (setting) situated in time, populated by individuals (characters), who participate in actions and happenings (events/plot) and undergo change".

A biography is a narrative account of the life of a person. Autobiography in turn can be described as the creation of embodied narratives grounded on personal experience and memories. In Narrating the Self, Ochs and Capps note that such personal narratives often integrate multiple communicative modes including visual representations and constitute 'versions of reality' (21). According to Ellis and Bochner, a researcher can make use of autobiography and ethnography to do and write autoethnography. Here is an instance theory guides the practice and practice supports the theory. This is indeed what happens when the autobiographical narrative is brought together through our method with observations about artifacts and culture.



Figure 3. "What I believe I should be", visualisation renders an autoethnographic narrative where the author describes his life according to the writers and literature works that have interested him at different points in time. In the illustration the designer researcher explicitly deviates from traditional linear timeline representations by using the so-called 'butterfly effect' (small causes can have large effects) from chaos theory (Wikipedia).

Autoethnography makes use of autobiographical narratives to describe and systematically analyze personal experience in order to understand general cultural experience. The process of creating autoethnography involves a retroactive selection and writing of past experiences. However, personal experience is not only an individual development but also something constituted socially through discourse and as part of collective performance involving a myriad of contexts and including artifacts. Thus the autoethnographer can use interviews with others, or consult texts, photographs, journals and other artifacts of culture (Denzin). Additionally Giorgio proposes that autoethnographic writing involves cultural and political tensions found between the "lived experiences and their meanings and ethical concerns about representation of self and others." In this manner autoethnographic narrative can enable spaces for critical intervention.

Experiences are assembled using hindsight so that interactional moments perceived to have had significance and impact in a person's life or events that have altered the fundamental structures in a persons life (epiphanies) are examined. These are the moments that occur at the liminal, in the rites of passage from one stage in life to the other, at the threshold moment of experience. They stem from and are made possible by being part of a culture or possessing a cultural identity. Denzin describes four types of epiphanies: the major event (or juncture), the cumulative or representative event; the minor or illuminative epiphany and the relived epiphany. We have observed these in the different narratives and timelines created through the exercise.

3.3.Graphics and Diagrams

The other element of our method, in addition to autoethnographical narratives is the timeline visualisations themselves which are created as part of the exercise. Timelines are graphical devices that structure information in a spatial manner by using non-iconic diagrammatic elements such as for example grids, reference lines, nets, and scales. Many times diagrammatic components are used in combination with iconographic elements that represent aspects and artefacts from the real world such as people and places. For example in Figure 2 the graphic of the Forbidden City is used to represent 'Beijing' and in Figure 4 blue and yellow pictograms stand for 'grandfather' and 'author' respectively.

Diagrams are more than images or visual representations standing for something else. According to Elkins: [A diagram is] "not a naturalistic representation, nor a normative x-y graph: It is a new kind of image that is neither a picture of the world, nor a conventional graph. For that reason diagrams are strongly dependent on their surrounding text and largely opaque without it" (Elkins 37).

Diagrams such as timelines are artefacts in themselves. They are 'objects to think' with (Bender 19) in which often Gestalt perception is deployed to show the relations between the parts, or maybe even the functioning of the parts themselves.

As a type of information representation graphic, the major function of a timeline is to consolidate and display time-related information for the purpose of analysis and communication (Harris 216). The timeline allows the viewer to 'see' when things have happened (and even when events might occur, if applicable). However, chronology is not synonymous with causal relation, rather it is the "natural ordering of the time scale that is borrowed" (Tufte) to enable efficient interpretation.

In the case of the autoethnography, the epiphanies experienced in life can be denoted as point data marks. However, in addition to highlighting significant moments, a timeline visualisation can open up for analysis the space between intervals. This means that relevant period data—such as what happens between moments of epiphany—can be inserted into the information representation. We can observe how this is done in Figure 2: Building the foundations of the staircase begin at birth, a red fish indicates happiness and abundance at the grandparents house; in the next stage the boy must work hard to achieve goals; after failure comes a new opportunity and a new girlfriend, and so on.



Figure 4. "Splendid 20" is the name of this timeline that combines lines and simple pictograms to show the influence of grandfather (blue figure and lines) on the author (yellow figure and lines) and how levels of confidence (white line) vary in time (beige line) and according to age (green line). Epiphany moments include discovering being gifted in sports at age 7. This brings a lot of attention and a transfer to a new school. Confidence level rises as reponse to the first event, falling slightly as a result of changes, and recuperating shortly afterwards. A period of stability ushers in, followed by illness and recuperation.

4. About the People

Located in three different geographic regions of South America, Asia, and Europe, the demographic of the groups that we worked varied widely. Whereas the group in South America was composed by more mature female and male faculty members in the design institute of a university, the group in Asia comprised quite younger Bachelor of Arts students in new media. Meanwhile, the group in Spain comprised a mixed age group that included faculty as well as graduate students from the art education department in a university.

The number of participants in each of the exercises also varied. Fourteen were present in Santiago, Chile; ten in Barcelona, and twenty four in Beijing. Time to carry out the exercise at these locations varied between two days in Chile and China to three days in Barcelona. The participants in these special editions of the course did not receive the additional knowledge from the Time Systems lecture. The Introduction to Information Design and the History of Information Design lectures were condensed into one longer presentation.

5. Conclusions and Commentaries

In research one focuses on gathering information and making sense of it. Often this happens by connecting to other areas of knowledge. Insights derived from the research processes involved are used to develop new design criteria. However, creation through art and design usually focuses on tangible objects as results that can be shown. This means that often there is no direct correspondence between what exists as output on the side of research and on the side of art or design.

Beyond the simple identifying and composing of elements, information visualisation is fast becoming a knowledge area that also supports exploratory processes involving high level cognitive (and interpretative) skills. that enables us to identify links and recognise connections (Chen). Information representations such as Personal Timelines developed through our method and in our workshop allow us to add dimensions so that data can be experienced over time and through space. Whereas the collaborative autoethnography brings an embodied experience to the narrative that potentially gathers all the senses, the graphic created is significant in how it allows to grasp a life in its entirety. In this manner it could be said that we come closer to the ideal of bringing the whole of a human being into the research.

Acknowledgements

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“Sketch and Talk”: an ethnographic design method opening closed institutions

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ABSTRACT

The aim of “Sketch and Talk” is to gain knowledge on the role the furniture and interiors play in psychiatric hospitals, prisons and similar closed institutions. Patients and clients in these settings are rarely heard or cited on the subject. The presented method intends to OPEN these environments for a critical view on design’s impact on power relations, health and habilitation.

“Sketch and Talk” is developed through an iterative process in real time-space-interpersonal situations and based on semi-structured qualitative interviews with simultaneous hand sketching/visual documentation of the physical environment. Sketching applied this way can act as a mediator, and may be perceived less threatening than other documentation tools, as photos or audio recordings. Due to situational and spatial circumstances, e.g. interviewing in the respondent’s cell, there is considerable risk of privacy violation and exploitation. However, the method’s focus on the physical environment’s power relations ‘in situ’ may reduce risk. Furthermore, the data that leaves the room is what has been transparently produced in an open process; what is captured, is openly displayed.

Through the method, prominent and seemingly less important features of the physical environment are made visible to reveal their meaning, intention and impact. Recent application of the method from Scandinavian prisons and forensic psychiatric hospitals illustrate and discuss problematic design issues.

Further development of “Sketch and Talk” can contribute to deeper understanding of ethnographical design methods, and improved design for mental health and prisons.

Keywords

ethnographic design methods, ethnographic drawing, design for mental health

Background

This paper is an initial attempt to reflect over the method development of “Sketch and Talk”, which is nowhere considered set, nor claiming to be new or superior to other methods. The intention of this text is rather an opportunity for a first reflection on ongoing methodological issues, hands on aspects, and ethical dilemmas. It is an investigation of “designerly” ways of receiving useful information as basis for design decisions, especially pointed to open up for a broader and deeper understanding of what it is to experience the physical environment in closed institutions, an under-studied field, which has lately received growing attention.

In newly built hospitals and prisons in Scandinavia the architecture and interior design has been debated in media to be “luxurious” (Gentleman, 2012) feeding a populistic debate on the distribution of public resources. However, current research on high secure forensic psychiatric hospitals indicate that the physical environment does have a positive impact on the care provided. This research states that the physical environment, a healing environment, can shorten the length of hospital stay, reduce drug use, lower stress levels and create a safer and calmer milieu.(R. S. Ulrich, 2013; R. S. Ulrich, Bogren, & Lundin, 2012)

Evidence Based Design (EBD), which focuses on design for health care environments, is an established field of knowledge, research and methods in the US, and becoming a popular point of reference in Scandinavian architecture and design for healing environments. Studies in the field of EBD are often cited and have become generalised knowledge. These studies emphasise, among many things, the importance of access to nature, autonomy for the patient, and single-bed rooms (R. Ulrich, Quan, Zimring, Joseph, & Choudhary, 2004). However, research in closed environments carries several ethical and methodological considerations. Research and data production in the field of EBD is essentially based on quantitative methods as surveys and registry studies. However, quantitative studies cannot alone answer questions to how the physical environment is experienced and its meaning to the people that occupy it. A qualitative approach “… is used in the exploration of meanings of social phenomena as experienced by individuals themselves, in their natural context.” (Malterud, 2001) Mixed methods may be used to give a better understanding; qualitative methods can produce knowledge and insights that otherwise risk to be overlooked. Consequently, ethical and methodological considerations articulate a need for a range of qualitative methods when doing research on humans in vulnerable positions, i.e. patients and clients in psychiatric care, jails and prisons. Incarceration produces damage to the individual through “prisonisation” and institutionalisation (Yngve Hammerlin, 2010). The list of loss and damage is extensive and results in mental and physical health problems as well as negative effects on family and children. From the perspective of humanism, according to government and UN standards (EUROPE, 2006; Nations, 1957 , 2076, 1977), it may be asked if, and how, these damages can be mitigated through design of the physical environment. Though, there is a problem. There is limited knowledge on damage mediated through interior design in closed institutions, and how it is exercised through materiality and physical limitations.

As a practicing product designer I have since five years designed and developed interior products for the above mentioned environments. Institutional environments were not totally unfamiliar to me, since I had designed for elderly care, but it was still unknown terrain. The design brief I got was extensive, and indicated existential questions as well as technical challenges. Terms as “homelike”, “normality” and “non-institutional” were used by architects and hospital staff to describe desired product characteristics. These closed institutions, that were now being replaced by new ones, were focused on security issues and the physical environment was somewhat expected to compensate for damage that high security institutions are known to produce (Yngve Hammerlin, 2010; Sommer, 1974, 1976). However, design for high security environments must consider issues as patient safety, staff security and vandalizing; features of “hard architecture” (Sommer, 1974). These features address contradictions to qualities addressed in design, such as aesthetics, semantics and function. Though, if desired, design can be used to enhance hardness and correlate solely to security issues without taking consideration to aspects of humanity and known factors from EBD, factors that may produce wellbeing for patients and clients. The dichotomy to design for both wellbeing and security is a tricky challenge.

When I designed for closed environments back in 2010 I experienced a lack of knowledge on how to relate to the ethical aspects of incarceration and how ethical questions should be interpreted and become part of the design process. I still have no clear answer, but I was fortunate in 2014 to become a Doctoral student in design, which has given further opportunities to both methodological and ethical issues. The subject of the doctoral project is the physical environment’s impact on people in closed institutions. I now divide my time equally between studies and partner in a design company.

To develop a better understanding of the physical environment’s impact on patients and clients I decided early in my studies to follow architects’ and hospitals’ processes in decision making when designing a new facility. When writing this text, I am still engaged in observing and documenting a Scandinavian forensic psychiatric hospital’s approach to achieving an up to date secure new facility. However, this project would not make much sense without gaining as much understanding and knowledge as possible on what it means to be a patient at this hospital. What started as a prudent request to interview patients in their milieu has grown to become a development of a qualitative method I describe as “Sketch and Talk” that actually had its point of departure at the previous CUMULUS conference in Johannesburg in 2014.

Method Development

Ethnographic sketching can be understood as way of studying objects, people and surroundings through visual documentation using pen and paper or other material that mediate drawn lines. It is a well-documented skill that anthropologists, inventors and researchers have used to document findings historically, but rarely in present time. With the introduction of photo and film in the late 19th century sketching and drawing appears less. The former methods/tools are often referred to as visual anthropology, which also includes ethnographic research using photos and filmed material. The term graphic anthropology is commonly used to describe the technique of documenting and producing narratives through the form of a graphic novel (comics).

I suggest that ‘”Sketch and Talk” can be defined as an ethnographic design method, or research method within design. However, it might not yet be necessary to label this ongoing method development, but to reflect upon how design tools can be developed to make sense of what cannot easily be understood.

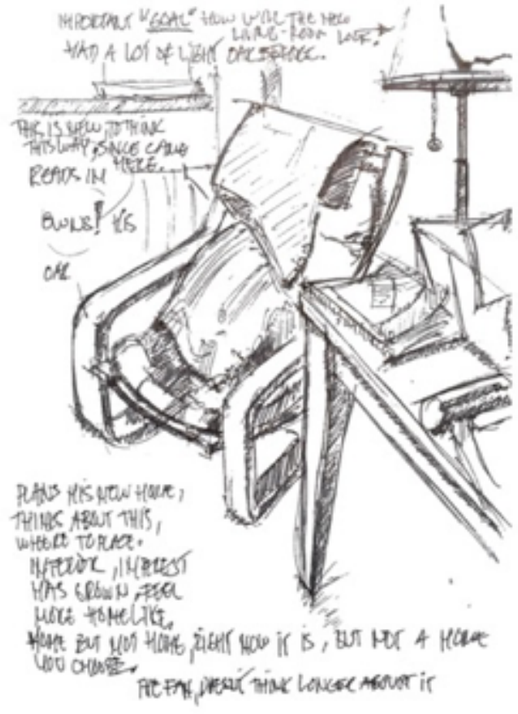


Image 1

The activity of sketching raises the level of consciousness to the spatial orientation of objects and the surrounding. “Sketching helps the designer to find unintended consequences…” (Cross, 2007). It allows a thorough shared exposition of private space and to zoom in on activities, situations or other phenomena that reveal themselves to be essential. The sketching could be understood as a radar that searches for hidden essentials and contributes to an understanding of objects and their meaning. An example is how the easy chair in the sketch revealed its symbolic value of hope

and future freedom. And transformed itself from a simple and inexpensive piece of furniture in my eyes, to be understood as a supportive companion for its user in the struggle towards a future life outside the institution.

As earlier stated, it has been important for the Ph.D. project to conduct research in the environment where clients and patients have their everyday lives and interact with the physical environment, furniture and artifacts since “Conducting research in everyday settings also allows study participants to have access to the people and artifacts that define the activities in which they are engaged as they respond to requests by researchers to describe those activities (note how this contrasts with laboratory settings or interviews conducted away from the locations where the activities of interest occur)” (Blomberg & Karasti, 2012) The everyday settings in research of the physical environment in closed institutions are rarely open for insight, and the voice of their inhabitants seldom heard. “Sketch and Talk” is an attempt to illuminate, mediate and open up for design oriented narratives of the experiences of the physical environment in closed institutions or what Goffman labeled as “total institutions” (Goffman, 1961).

Initial Method Development

The starting point of “Sketch and Talk” was in September 2014 when I was given the opportunity to participate in the Johannesburg Cumulus Conference Design with the Other 90%: Changing the World by Design. A couple of weeks before the conference I was lucky to get in contact with the research department of Johannesburg Correctional Services and was granted to visit the Johannesburg Prison, a.k.a. “Sun City”.

I had requested permission to take photos. However, my request was denied and it was clearly stated to me that recording, photographing or filming was out of the question. When visiting the prison wards I was permitted to bring my sketchbook and a pen, nothing else. As the generosity from staff and inmates provided plenty of time for interviews, sketching and informal talks with both staff and inmates my planned one and a half hour became five. By the end of the day I had eleven sketches.

When I interviewed the inmates I sketched simultaneously as we talked about the interior and objects in the room. The quotes and the content transcribed in real time from the interview surrounded the sketches and framed what had been most important about the inmates narrative. In the interview situation I found that sketching created an active interest and possible point of discussion.

The interviews were unstructured as my visit did not include planned interviews, therefore precluding preparation. The subject, however, was clear and the interviews came to circle around the interior, objects and ’feeling at home’. In all interview situations I asked permission and I assured the respondents that I would anonymise my material.

I found that the respondents were surprisingly willing to share their experience of prison life, even though they sometimes were without answers to my questions. When interviewing a young woman she expressed that nothing of the physical environment was of importance to her, she said that, ”nothing matters”, and I felt that I would not get any further in the conversation. I then spotted a bottle on a shelf next to her locker and asked her about it. She engaged in the conversation and told me that it was her skin lotion and that it kept her sense of being ’herself’.

Talking to a man of my own age I learned that objects that are specifically valuable in the prison context can be a root to violence. He told me that he spent the day in bed to guard his objects, whereas toilet paper was one of the sought after valuables. They were forty-eight inmates that lived in a crowded room, designed for twenty-four. The men shared one toilet and were given two rolls of toilet paper per week, in total. Fights were common and theft between inmates a cause to the fights.

Another observation from ”Sun City” was the absence of anti-ligature furniture and fittings. According to the officer who guided me through the male section of the prison they would have at most one or two suicides per year. This is low at a prison with 4 500 inmates. These figures may be compared with Norwegian statistics where there were 59 suicides in prison 1990-2007 which is the equivalent of 3-4 per year. (Yngve Hammerlin, 2010). According to the officer that guided me there were two reasons to low suicide rates, one; it is cultural, two; the crowding keeps suicide low.



Image 2

The experiences from “Sun City” made me realise that I didn’t need a camera to document what I had seen, felt and interpreted. The notes and sketches in real time had been produced in the prison; they were now a physical memory of the prison. The sketchbook and the sketching had not been an agent for creating boundaries between the informant and me, rather something we had shared. This might be a naïve thought considering the power relations in play between a visiting Swedish doctoral student and inmates at a prison, but at its best the sketching may be seen as an agent for communication, distracting from obvious power relations.

After “Sun City” I began field work in Sweden at a forensic psychiatric hospital . I got the same answer there regarding photography as in South Africa and quickly proposed sketching instead, which was accepted by the administration.

[1] Anti-ligature is a term that represents products that resist attempts of self-harm or suicide.

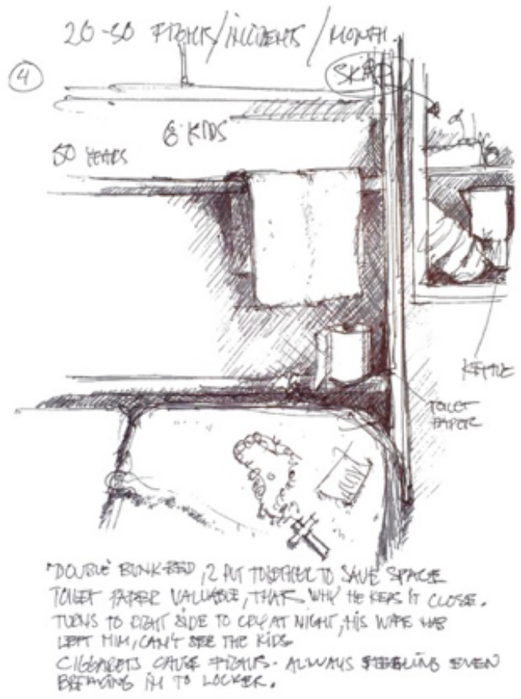


Image 3

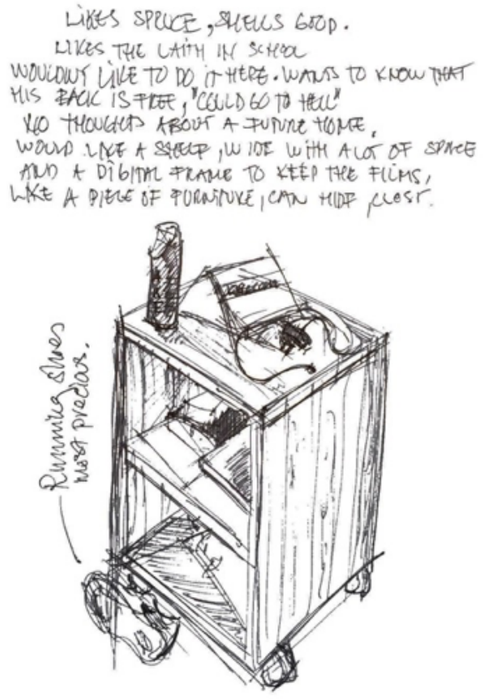


Image 4

Sketching and Talking at The Hospital

Patients at The Hospital have been assessed as mentally ill at the time of committing a crime and are commonly judged as a risk to society, and/or themselves. The average treatment is five to seven years, but usually never shorter than eighteen months, and there is no maximum time set for their care.

One of the first patients I met, “L”, had been in treatment for almost twenty years. He was now in in his late forties. The following text was noted at our initial meeting:

We had already met in the morning, it was easy to pick up again and I said that I would like to see his room, and if we could talk there. He said that he hadn’t tidied up his room. I said that’s fine, I´m interested in how it is, not how it looks.

The room had the same set up as the others rooms. It was furnished with a wardrobe, a security mirror, a laundry basket, a desk, a wooden bed frame with a mattress, an armchair with a padded seat, a shelf above the bed, and a wooden stool. There was also a TV stand with a media storage compartment, a three-story shelf on the wall across from the bed, and window curtains. To this L had added a wardrobe and a worn office chair - the only piece of furniture L claims ownership to.

I asked L if he knew what type of wood the furniture was made from. He said he had no idea. I went through each piece of furniture and then he said he could see a difference between two pieces because one was darker. The media storage was the only piece of furniture made from pine so I asked him if he recognised the kind of wood. L didn´t, then he said that he had enjoyed woodcraft at school and helped the teacher once when the teacher had an order to make and deliver. L had enjoyed helping out and he said that he likes spruce, “it smells so good”. L started to talk about turning wood and how much he liked doing that at school. (He really livened up at this moment) I asked L if he can’t use the lathe at The Hospital’s workshop, but L said that he wouldn’t like to do that because he wants to know that his back is free, otherwise it, ”could go to hell”, (meaning that someone could hurt him if he doesn’t watch out.)

Next time I met L I asked if The Hospital was home to him. He answered immediately, “NO!” and went on, “I´m not going to live here my whole life, and then it will come someone else after me, who thinks something different” [of the physical environment]. “Me, it’s important that this is not [home].” I asked how he makes sure that it doesn’t become home to him. L said,” It would be stupid of me to make this my home. If you make it into your own home, cozy and nice, then you don´t want to move. It costs money to furnish.”

Admittance

My request to do field work at The Hospital was granted with a wish, but not demand, that I would share my reflections and give advice from a practicing designers point of view. As they were in the process of building a completely new facility they saw me not only as an administrative burden, but also as an opportunity for free expert feedback. Their project leader (PL), whom I had contact with previously through my practice, became the “gatekeeper” (Fangen, 2005) who’s importance cannot be underes-

timated. A gatekeeper not only holds the function of approving the fieldworker to the group of people inside the research area but can also be an important ally to share uncertainties with. In many cases of fieldwork, the fieldworker and the gatekeeper develop friendship. This friendship can have two sides, Fangen quotes Öygarden: “The fieldworker’s need of a friend should not be underestimated, the friend’s need of a fieldworker should not be overestimated”. (Fangen, 2005, p. 72)The quote does describe a relevant part of fieldwork. Field researchers are not part of the group that they study, you are invited under special conditions, and in best case are seen as a friendly visitor with a specific quest. When visiting The Hospital I needed to stay overnight, PL offered me to stay with his family, which I gladly accepted. Not only was it positive for my budget and a welcome change of environment to the other house I had stayed alone at, it also gave time to socialise and develop a better understanding of working at The Hospital. In return I have mediated accommodation for PL and family where I live. The exchange of favors has not been an intentional strategy, nevertheless, it gave me an opportunity to repay the offered hospitality.

When I was given admittance to The Hospital I was asked to go through a security introduction and a background check of my criminal record was done. I also signed a security agreement to not distribute any security-classified information. This dedication to security requirements create a rigid frame to do research in. The benefit of these agreements is that it has given me admittance to security classified data such as drawings, surveys and a mock-up room, which has provided a deeper insight into their process. But, the agreement may also regulate what images or data I can publish. So far I have been open with my material and do not see any risk with it remaining so.

Situational Considerations

At forensic psychiatric hospitals and prisons visitors are restricted to visitor’s rooms, never to the ward or patients’ rooms. I had asked to meet the patients in their rooms since it was specifically these environments I was interested in. I understood that staff found this odd since client/patient rooms could be messy and that the room functions as part of the patient’s rehabilitation where aspects of morality and norms are connected to keeping order and a sanitary environment. Another reason to the skepticism of meeting patients in their private rooms is that the visitor’s room can be a safer environment. At a couple occasions institutions have stated that a caretaker shall be present, but commonly I have been alone with the respondent.

Methodological Considerations

The development of Sketch and Talk has so far focused on developing a method with the aim to produce data of patient/client experience of living in closed environments. Collecting data in high security environments is time consuming and dependent on staff’s possibility to aid. The activity of waiting is not unknown to field work. It takes time all together to get to the interview, however, most of this time is not lost time. Plentiful information comes through chit chatting and observations.

If possible it is important to schedule time after an interview for transcription, but not always possible. An interview with transcription takes around three to four hours, not counting the time waiting around or talking to staff. It is time consuming to book interviews, wait for answers and have meetings cancelled on short notice. As a cause of much time spent on field work, it has left little time for methodological consideration of analysis methods. An important aspect to this research and coming dissemination of the material is the under-researched field of patient experience of the physical environment. Therefore, it will be essential to give a rich description of the collected material to elucidate the voice of the participants.

The sketch offers a selective focus on specific objects or phenomena and can exclude surrounding visual clutter. It is an important methodological issue to critically reflect to the subjective data embedded in a sketch. The subject of the sketch is subjectively chosen and it does not render a “true” documentation like the capture of the camera. However, this comparison is not an issue this paper will discuss in depth, nor is it necessary since the idea that a photo is true by nature has been long dismissed. Other methods such as Photovoice can be an alternative method to photo documentation. It gives the respondent/participant ownership of the captured image and brings important democratic and critical issues in play. (Wang, 2001)

The image of the designer, or design researcher, that is commonly communicated in popular media appears to disseminate the idea that a designer is an expert who can judge interior design and tell if it is right or wrong. It is a preconceived idea, but if not paid attention to it may influence the collection of data since the informant can feel less superior and will try to “give the right answers”. On the other hand, I have experienced situations where respondents have been eager to share their opinion, for instance of a mock-up room, because they see me as an “expert”, and an ally, who does not represent the hospital and whom they can confess to and give their personal opinion. When interviewing “XY”; I asked if he felt at home in his new room. He answered that, ”We are not at home, it is apparent!” This type of answer is on one hand simple and short, on the other hand it contains values and implicit feelings that likely would not have been communicated through traditional quantitative methods such as surveys or structured interviews.



Image 5

In the situation of talking and sketching where there is mutual focus on an object, it not only situates the object spatially, it also situates the researcher and respondent in relation to the object and to each other. The researcher is not the center of the sketching, nor is the respondent. We both agree to the situational understanding/construction of space and interrelation where the object is central.

Technical Tools

Pen and paper are uncomplicated and reliable tools tool for visualizing, communicating ideas, and documentation. Personally, I still find sketching to be a functional tool at meetings and in my work as a professional. An advantage at meetings, even if I do use the computer on and off, is that the attention to the other participants is displayed through the active notification in a sketch book, and will not be mistaken for reading e-mails or using social media. In other words, notification and sketching that is openly displayed can show engagement in the other.

The specific tools used when documenting have been the Whitelines Link notebook and commonly a Pilot G-Tec pen. This may be considered to be “nerd information”, however, it does have an impact on the result and have been a subject of conversation several times. The sketches have been scanned using a cell phone and the Whitelines app which scans the page automatically when it detects printed corner symbols. The positive side of using the application is the simplicity it affords for quick digital storage (which has saved data from being lost) and removal of the sketchbook’s grey background and white lines, the Whitelines concept. The backside is that the application settings provide poor contrast and resolution. Nevertheless, I have so far found these tools helpful and smooth to use.

Ethical Considerations

When I have met respondents in their rooms I have tried to be aware that I invade primary territory which can be defined as a person’s home or living space. In this situation there has been an unfamiliarity to the informant’s boundaries of “personal space”, “…an area with invisible boundaries surrounding a person’s body into which intruders may not come” (Sommer, 1969), which calls for caution due to the risk of exercising power by neglecting these boundaries. However, I have found that this can be reflected upon together with the informant and overcome rather early to be able to proceed, or otherwise there is a risk of not connecting. Interviewing the same person in the same room a number of times has advantages since we both learn how to relate to personal space and can modify spatial and relational positions, and then reflect upon these positions.

In the context of The Hospital I have been referred to as “the researcher”. This says something about how I am perceived and that the persons who I met may not have a similar academic position. However, in many situations respondents have been eager to share their own experience from academic studies or ideas of future studies. Fangen points out the importance of self-reflection that structural differences between the researcher and the informant have an impact on data. (Fangen, 2005).

In closed institutions social life is limited to a group of people that the patient/client has not chosen to socialise with, hence a visit and an interview with a researcher can break up monotonous life. One respondent recently said that she was happy to help with research because she sees the researcher as a “temporary friend”.

Respondents who I met at The Hospital did so voluntarily. Prior to the interview respondents at The Hospital were informed that the interview was to be about the physical environment and nothing else. I also informed them that the material would be translated to English, making it more difficult to identify them. Any information on why the respondent was incarcerated or on his or her medical status has intentionally been left out. The respondents were informed that they could stop the interview at any time and that the data was to be used for the doctoral project. The interviews at “Sun City” were not planned which gave the respondents short time to reflect upon participation. Some inmates declined.

Further Development of “Sketch and Talk”

In closed environments that afford few opportunities to express personal identity and create a space of belonging it is important to recognise the strong symbolic values embedded in objects and furniture. In society outside institutions, these may be the objects that create a home and thus express the identity of the homeowner. Qualitative methods such as “Sketch and Talk” that can contribute to further research on the impact of the physical environment are an important contribution, not only to the growing field of evidence based design methods but to design methods in general. “Sketch and Talk” will be further developed in an upcoming research project concerning adolescents’ experience of the physical environment in secure youth care.

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Dialogues through design: ethnographic explorations of creative process

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ABSTRACT

Ethnography has traditionally examined fashion in the context of consumption. This aligns with material culture's inclination for examining the meaning of objects through consumption rather than design, which should be considered the actual starting point of their meaningfulness.

In spite of the wealth of perspectives interrogating fashion, there is a marked absence of literature exploring how it is actually created. Using an ethnographic study of women's shoe designers, this paper unpacks the real creative process. The research focused on the practical, material and social processes that bring the creative ideas of designers into the commercial sphere of the fashion system. Ethnography will be seen to be an integral method for revealing design from the perspective of its practitioners.

Central to the paper is an ethnographic dialogue between researcher, designers, ideas, materials and commerciality, bringing a more emotive perspective to design. Lasting eighteen months, the study involved observations of the practical stages of design and interviews with studio based designers, who apply a more handmade approach to their creativity.

Ethnography was used to understand how design happens practically and commercially, as well as how it is experienced from the perspective of individual practitioners. A phenomenological approach was applied with the researcher learning to design and make shoes, enabling a reflective interpretation of data.

Design was revealed to be fluid, sensory and reliant on tacit knowledge. The creative process for each designer was both experiential and personal, yet grounded in commerciality. The paper will tease out these tensions.

Keywords
ethnography, designers, creativity

INTRODUCTION

"As a designer I am constantly looking everywhere observing things around me, seeking new and sometimes quite unexpected sources of inspiration for my next idea. Whether it be bits of wood fallen from trees, worn pieces of rope washed up on a beach, the textured surfaces of natural leathers, the hard inflexible feel of plastic against the coldness of metal pipes, any of these can trigger my imagination, leading me to contemplate the infinite possibilities for my next shoe design". (Chau Har Lee, interview, 2009)

This short extract exemplifies how a shoe designer has narrated their approach to a particular stage of their design process. It comes from one of many interviews undertaken with shoe designers for an ethnographic study that explored creativity within the realms of shoe design. This particular interview took place in Chau Har Lee's East London studio. I visited Chau a number of times, observing her, while she contemplated, conceptualised, reflected and made shoes. The ethnography with Chau, and the other twenty-four designers profiled, encompassed interviews about their design practice, observations of them working, and in some cases. object based interviews that focused on shoes that they had already created. The methodology sought to observe, describe and interrogate creativity in the context of shoe design.

As I spent time with Chau in her studio I observed that she was surrounded by bits and pieces; pages torn out from magazines and pinned to the wall, sketches, photographs of bits of material wrapped around her foot, shoes she had already made, pieces of leather and new designs in progress. All of these were the tools of her creativity, whether they be the sources of inspiration for designs or the physical realisation of ideas. As we talked through the shoes that she had previously made, she showed me a green leather shoe with a heel that had been carved from a found piece of wood. Another design had a black fabric upper with a heel constructed from a sawn off piece of metal piping, again something she had found on the street. Through observing her work and listening to her creative narratives, it was evident that Chau experimented with her designs. It was the textural properties of materials that she found particularly inspiring, followed by the challenge of subverting these from something that was hard and inflexible into the aesthetic exterior that becomes the curved silhouette of a shoe.

These ethnographic encounters created opportunities to discuss and observe the creative process from the perspective of the design practitioner. More traditional theoretical approaches to design have tended to privilege its interpretation through the created objects, meaning that the processes and practices involved in making things can lie hidden (Clarke, 2011). Although there is a body of literature exploring design and designers, particularly architects, product and industrial designers, there is an absence of ethnographies that interrogate the creative process of fashion or accessory designers. In response, this ethnography brings the practical processes of shoe designers into the limelight, presenting how shoe design really happens. Through analysis of the empirical data the paper discusses how ethnography was implemented with these shoe designers and argues why it was the most appropriate method for taking a more nuanced approach to design, one that privileges the practice of the individual practitioner. Observations, interviews and the author's own foray into the world of shoemaking has resulted in a volume of different ethnographic dialogues, between researcher, designers, ideas, materials, tools, making and commerciality. More classical notions of design 'in which an act of drawing was thought to be prefigured by concept, embedding wherever possible the representation of mental schema into the context of social practice' (Küchler, 2011: 131) tend to prevail in design literature. Design is defined as a process of thought and planning, that gives 'form, structure and function to an idea' (Nelson and Stolterman, 2003:1). While ethnographic findings support this definition, the dialogues reveal that design is not linear, as the more classical approach implies. Instead it is complex, fluid and, in the case of these designers, emotive. Through ethnography the paper explores how the practicalities of design are embedded with each designer's experiences of the complexities of their creative and commercial worlds. An ethnographic approach has fleshed out these tensions, and in so doing, reveals the often hidden workings of this part of the fashion system.

The opening sections of the paper take a theoretical stance to the subject matter, teasing out what is already known about how design and designers work. This will include a consideration of the synergy between anthropology and design. As this study was grounded in material culture and fashion, an analysis of how the study contributes to these disciplines will be explored. This is followed by the case for an ethnographic methodology which presents the approach to the methods and how they were implemented. The main section turns to the raw data using it to describe and interpret how designer shoes are really created. Through the detail and depth of description the ethnography brings intimate knowledge of how design happens for these particular practitioners.

Theoretical Approaches to Design and the Role of Designers

The discourse that addresses design is vast and complex. Flusser (1999) drew out the complexity of the term, as it is both a noun, meaning a plan or aim, and as a verb, it includes the act of sketching and making something. In the context of this study a holistic approach to design and creativity has been applied, where the focus is not just on the idea, but the process that brings it into being. Historically design rose alongside the growth of a capitalist society, reflective of manufacturing changes but also a designer's own interpretations of culture (Sparke 1987). Problematic in the history of design theory and to an extent material culture has been its tendency to focus on the finished object. Ingold (2011) argues that it is impossible to study design without making as creativity is a forward moving process of growth from idea to finished form. The more object based approaches have meant that design is often unpacked in the context of use (Brandes, 2009), in this case the meaning may be quite different in use to how it was originally intended. This approach is prevalent in the fashion system where once a designer lets go of their creation and it enters the commercial world, its intended meanings may be quite different for the consumer who buys it (McCracken, 1986).

The literature that is concerned with design process rose out of design methodology in the 1960s and was concerned with how designers think and act (Cross, 1984). Lawson's (2005) work on the designer and their thought processes was particularly influential to this study. He acknowledged that design follows a particular trajectory, engaging a series of events, one of which is the formulation of ideas that leads to the creation of a product. It is a process that combines technical skills with aesthetic appreciation (Lawson, 2005). The creative process of the shoe designers will be shown to be guided by both the aesthetics of their individual design ideas, as well as the functional requirements of the commercial fashion system. Pye (1964) discussed how design was a relational process where form, materials and function of products are in a constant state of flux. Within the ethnographic dialogue to follow this flux is clearly evident, yet it includes also the designers and their individual approach to creativity.

How designers get ideas is integral to understanding creativity. Lawson (2005) argues that it begins in the mind but is then externalised most usually through the act of sketching which develops thinking around the creative idea (Verstijnen et al, 1998). Exploring the role of sketching has brought a reflective perspective to design (Schön, 1983). The 'gestures of hand in drawing allows the mind to think and explore the workings of design' (Sennett, 2008).

More traditional understanding of the workings of the fashion system is that it is a fast paced, seasonal system, driven by change. Blumer's (1969) study of Parisian fashion designers during the 1930's found that they were translating areas of modern culture into their designs, including art, literature, politics, which was understood to exemplify collective taste. The importance of the current zeitgeist as a source of inspiration for fashion designers is still frequently acknowledged (Vinken, 2004). As well as responding to cultural trends, designers are assumed to tailor creations to favour the needs of fashion editors, buyers and consumers. This would indicate that designs are grounded in commerciality and not the subjectivity of the designer, and in response the ethnography sought to investigate if this was really the case for shoe designers.

The fashion system as the means by which goods are 'systematically invested and divested of their meaningful properties' (McCracken, 1986: 76), tends to mask the creative processes of fashion products. Theoretically fashion is understood to be most meaningful at the point of appropriation (Breward, 2003). Such a focus denies the significance of the process of design and production which are the true starting point of an object's life, and therefore, meaningful (Attfield, 2000). Fashion has moved from the frivolous to become a subject of serious academic interest (Brydon, 1998). In particular its aesthetic and material propensity has paved the way for its role in understanding individuality and identity. While there is no doubt that what we buy and what we wear says something about who we are and gives a visible presentation of self, it is important to consider how the designers may also

negotiate their identity through what they create (Campbell, 2012). It is this which the ethnography addressed with the objective of bringing further understanding of how another part of the fashion system actually works.

Although much is written regarding the workings of the fashion system, there is a lack of information about the intricacies of the design and production process of shoes. Discussion of shoe designers is generally biographical and reserved for the most famous shoe designers of the twentieth and twenty first centuries including Salvatore Ferragamo, Roger Vivier and Manolo Blahnik. In terms of design research, Giovanni Luigi Fontana (2006) has charted the role of the designer using a study of the development of the Italian footwear manufacturing industry. We learn from this work that shoes are a result of a creative process, through which they acquire certain 'shapes, colours and forms' (Fontana 2006: 327). However, despite this research into shoes, we know little about why and how they have been created and what the shoe designer's role in all of this might be. The ethnography set out to address this gap.

Material culture which sets the context for this study of creative practice in shoe design, emphasises that fashion means at the point of consumption (Miller, 2011). Articles of clothing objectify meaning for its wearers through the 'sensual and aesthetic' properties of materials (Miller, 2005: 1). Traditionally ethnographic approaches to fashion and clothing have focused on its relationship with the wearer (Woodward, 2007, Miller and Banerjee, 2003). This, alongside material culture's concern with the abstract analysis of things already made, is limiting, and spells a need to explore how things are designed and made (Ingold 2011). Fashion as a worn article is not solely aesthetic, it feels, and thus initiates an embodied experience of wearing (Woodward, 2007). It is how the material has been cut and stitched which imparts a particular feeling and initiates a dialogue between the article and the wearer, and there is a need to understand how the process of design is engaged in this. The role that materials played in the process of creativity was revealed through the ethnography and the data contributes a more material and sensory understanding of shoe design.

Anthropology's interest in design has increased significantly, particularly in design thinking (Gunn, Otto, Smith, 2013). This growing body of literature brings a different perspective to understanding objects, by bringing out the relationships between designing and producing (Clarke, 2011, Otto and Smith, 2013). As a consequence, there is a new emphasis on 'the social and emergent aspects of creativity in design and the shaping of things' (Otto and Smith, 2013: 9). The development of this relationship between design and anthropology strengthens the case for ethnographic enquiry as an inroad to unpacking how creativity gives rise to things. To truly understand creativity and how things are made, we need to follow the flow and movement of the design process (Hallam and Ingold, 2007). Ethnography with its focus on deep description and contextualisation enabled the researcher to gain this knowledge through the 'convergent acts of observation and interpretation' (Drazin, 2015: xxv). Anthropological approaches to design complement the earlier work of theorists like Schön (1984) and Sennett (2008) who showed design to be 'reflection in action' (Otto and Smith, 2013: 10). By using ethnography, it becomes possible to elicit further understanding of reflection through the interrogation of the complex relationships that designers have between thought and action.

Through a series of observations and interviews with twenty five designers, ethnography revealed that creativity was both a commercial and subjective process. In so doing it teased out the often conflicting dynamics of the fashion system.

Ethnographic Approaches in the Context of Shoe Design

As an 'instrument of inquiry' (McCracken, 1988: 9), ethnography with an emphasis on prolonged engagements with informants, presented itself as a suitable method to examine the process of shoe design. These engagements included interviews, participant observation and a phenomenological approach where the author leant to make. This research took place over eighteen months enabling the observation of a number of creative cycles.

The research focused on the specific sector of contemporary British shoe design that was high-end, expensive and usually defined by the presence of a single designer, rather than a large-scale commercial institution which may employ a team of designers. The act of creativity in the smaller companies profiled is personal and individual, centred on the sole designer who sits at the heart of a creative network which can include a factory, sales agents, PRs, buyers and fashion editors, amongst other cultural intermediaries (Entwistle, 2000). Creativity is not a quick act. Due to its link with the cycle of fashion, it evolves over a six month period from idea through to the production and subsequent sale of a commercial commodity. Even before the created shoe appears in the buyer's store, the design process for the next season is already in motion. With creativity, being thus, only a holistic methodology would enable close access to the designer's creative and commercial worlds. Ethnography as a method that brings depth of familiarity and trust between the researcher and researched, as well as allowing the prolonged engagements required to observe these creative cycles, was therefore deemed appropriate to interrogate design.

Ethnography was applied to produce rich, descriptive data that was in-depth, contextualised and all encompassing, situating the behaviours, actions and beliefs of these shoe designers in a wider, socio-cultural context of the fashion system. It involved 'direct and sustained contact with human agents, within the context of their daily lives (and cultures), watching what happens, listening to what is said, asking questions, and producing a richly written account that respects the irreducibility of human experience, that acknowledges, the role of theory as well as the researcher's own role and that views humans as part object/part subject' (O'Reilly, 2005: 3). The study did not use ethnography in the traditional sense where researchers live in the midst of people under investigation (Hockey, 2002). Instead it took a more fragmented approach (Pink, 2009), observing these designers between private and public spaces, homes, studios, shops and sometimes trade fairs. This is symptomatic of contemporary British society where research sites are often heterogeneous and scattered, and where the most interesting stuff happens 'behind closed doors' (Hockey, 2002: 209). Ethnography has enabled access and been used to understand the individual and how they contribute to the culture of shoe design.

The research centred on the designer end of the British shoe industry, focusing only on women's shoe designers. The luxury end of the market was selected as it is here that creativity from the individual designer is most visible. The designers were chosen as they were known for creating shoes that were aesthetic and materially interesting and often open to experimentation in terms of their silhouettes and materiality. The majority of profiled designers were studio based who designed and made by hand. There were, however, a number of designers who also had shoes made for them in factories in Italy, Spain or China. This contrast brought a diversity of experience. In order to achieve the depth of data needed I visited the designers on many occasions and at different stages during the creative process. Interviews were carried out either in their homes, studios or in some cases their retail store. This enabled the observation of them at work either creating or selling their designs and it also brought access to past creations which formed the focus of object based interviews. Material culture shows how people express themselves through objects and was an important approach for exploring how designers narrate their identity both creative and personal through the things they have created. The interviews were conducted in an informal, semi-structured manner, often while the designer was working. The process was an opportunity for each designer to discuss their practice and experiences of it, which in turn allowed them to reflect on their own creativity (Pink, 2009).

In the realms of design, ethnography did have some limitations. As I observed and interviewed designers I was witnessing a process that was embodied, sensorial and material, but as a researcher I felt distanced from these creative actions. This distance is well noted in ethnographic accounts of practical skills. Keller (2001) reasoned that despite the fact that the practitioner and observer are focusing on the same physical motions, they will see and think through them quite differently. For the designers to describe exactly how the actions of design felt was challenging as they work now so intuitively using repetitive acts, that become beyond verbalisation. As ethnography is a corporeal process whereby the researcher not only learns from the research but also through their own physical experiences of what they are studying. I decided to apply a phenomenological approach by learning to design and make shoes. The body is the site of perception and consciousness, through which we can learn and make sense of things (Merleau-Ponty, 1964). So to make sense of creativity and reflect on the ethnographic findings I attended two design and shoemaking courses; the paper will make reference to this with the intention of showing how it supported the interrogation of the ethnographic data. The ethnography produced an extensive volume of individual narratives, supported by observational notes and fieldwork diaries. Due to the scope of the paper, these have been drawn from to give an overall view of design process. In the true essence of ethnography, though, particular examples from an individual designer will be described in more depth, to ensure a more contextualised and reflective approach to the understanding of shoe design.

Ethnographic Dialogues

Interviews, observations and a number of shoemaking ventures revealed that shoe design was not linear but instead fluid and sensory, reliant on the designer's tacit knowledge. All the designers profiled were creating for the fashion system, yet they worked in very individual ways. There are key stages that must happen in the design process, sourcing of ideas, material selection, sampling and selling (Lawson, 2005); yet how each designer approached this was very individual and could be different from one design to the next. This revealed the complexity and highly subjective nature of the creative worlds of these individuals. Sources of inspiration, as an example, were rarely narrated as being guided by current trends (Blumer, 1969) or the needs of consumers, but instead were expressed as representations of personal interest and taste. The line: "I design what I would like to see, rather than what is deemed to be next season's key look", frequently came through the interviews. The textured, coloured surface of a piece of leather seen at a trade fair may trigger the designer's imagination, perhaps evoking memories of something, a holiday or childhood experience. This may inspire a design that becomes a material representation of this memory. The ethnography revealed that design was very personal and experiential, but in stark contrast it was usually always geared towards commercial outcomes, ultimately the need to sell shoes. As one designer stated; "what I design is what I love and what I feel passionate about. Of course it does have to sell, but ultimately my creations are firstly about me" (Joseph Azagury, interview, 2009). Shoe design it seemed was about creative compromise, the balancing act between creativity and commericality.

For the shoe designer Thea Cadabara the ideas stage of design was about experimenting with different types, textures and colours of leathers. It has always been one of the most exciting parts of her design process. When discussing her early years as a designer during the 1970s, Thea recalled how much she enjoyed visiting a particular leather supplier in Paris.

"I always used to visit this wonderful supplier in Paris who did amazing leathers. They had piles and rolls of rolls of these wonderful kid skins with amazing textures. They were printed and sort of glistened. You could buy one skin and take it home and make a leather shoe. Then you could go back again and find something else. Each time was unique and fun. Seeing leathers and imagining what they could create it does excite one. Beautiful crafted leathers are exciting to see and finding a use for them is so inspiring." (Thea Cadabara, interview, 2012)

Thea does not actively research sources of inspiration, it is a more a case of continually observing things around her and seeing what comes to mind. This was the same for many other shoe designers. Although they went to trade fairs, observing materials and shapes for the forthcoming seasons, their actual designs ideas stemmed from a process of reflection on all that they had seen, and how, that then translated, into something which related to their personal passion and taste.

For Thea, kid, which is a fine soft leather made from goat or lamb skin, is her favoured material. During our interviews she showed me her material chest full of brightly coloured and glittery skins. Thea loves the soft, almost papery feel of the skin's texture, and importantly it comes in small sizes perfect for her design work where she likes to combine lots of different colours in a pattern. She described how through touch, these skins just seemed to 'come alive' in her hands. At the time of our first interview she was using these materials to recreate some of her past designs including a shoe based on a waterlily. Laid out on the floor of her sewing

room were lots of different colours cut and stitched into tiny pieces that would form the petals and the leaves of the design. “I work with lots of colours and as I’m doing it I might change my mind and think that a fuchsia petal would be better in purple. So let’s try that” (Thea Cadabara, interview, 2012). The start of Thea’s creative process sees her surround herself with different colours and textures. Through handling the material, Thea connects with its tacit nature and a ‘dialogue’ begins and she understands how the material could translate into a particular shape and form (Sennett, 2008). Here senses of sight and touch are in dialogue with each other inspiring and igniting the creative self. Thea is experiencing what Sennett terms material seduction, and through the touch and manipulation of the kid skin she is gaining knowledge of its structural possibilities and the type of design it could become.

Thea’s ‘Waterlily’ design emerges from the sensorial engagement with the textures of the kid skin. The materials’ presence in the designer’s creative process reflects not only the aesthetic and structural qualities that will become the designed shoe, but also that of the designer’s personality, taste and creative biography. Thea’s creative narrative demonstrates that rather than create shoes that will be determined by the commercial cycle of fashion and the following of seasonal trends, she is interested in designing shoes that reflect her interests and tastes and therefore have longevity beyond the limited temporality of fashion. Through her selection of particular materials and designs, Thea is reflecting the things that inspire her creative self and her designs become embodiments of self-identity.

The interviews and observations with Thea took place in her home, where she worked. On one visit she let me look inside her shoe cupboard, where there was a pair of every shoe she had ever created. As we discussed what each meant to her and why she had made them, Thea was able to narrate her creative past, revealing and reflecting on her biography. Thea came to shoe design to fulfil a desire to make unique and outrageous shoes that she could wear to all the parties held in London during the 1970’s which the ‘design crowd’ would attend. It was all about dressing up, being seen and standing out. Thea could make her own clothes but she said that unusual shoes were always a struggle to find. It was because of this that she found a shoemaker in London who agreed to take her on as an apprentice. By working with him she learnt the skill of shoemaking and acquired the technical and material knowledge of how a shoe design transforms from a flat piece of material such as a leather into a three-dimensional structural form that supports the body through wear. When we first met Thea had returned to her design roots and was re-creating past designs to sell in small numbers in unusual London boutiques. During our interviews it was clear, that for Thea, as with other designers, creativity was driven both by the inspirational and sensorial qualities of the materials and a passion for designing shoes that reflected her creative self-identity. These two strands to creativity were key in the ethnographic findings, and what they suggest is that while shoe design is intrinsically part of the fashion system, it is inherently personal and emotive.

One of Thea’s most treasured designs is ‘French Maid’, originally created in 1980, but remade in 2014. Reminiscing on the inspiration for this she recalled how her husband James had bought her a vintage French Maid’s outfit. She wanted to create a pair of shoes that she could wear with this. She found some black and white kid and started cutting out patterns that evoked the style of the maid outfit. ‘I designed and made the black and white upper, with the white pleated apron front, tying at the back of the shoe with a bow’ (Thea Cadabara, interview, 2013). The design of the heel was a pair of female legs carved out of wood by hand, which was a reference to the shape that women’s legs take when wearing high heels. The curves of the naked legs on the heel played out the eroticism inherent in the connotations of a ‘French Maid’ and also in the heel itself as an objectification of gender (Brydon, 1998). When Thea recreated this design, she commissioned an artisanal factory in Italy to manufacture it, with the intention of selling it in small volumes. A design that was originally unique and inspired by the designer’s own personal memories, and therefore had an emotive connection, had become a commercial object. With that came all the tensions of the commercial system, negotiating prices and concerns that the factory would not make the design as it had been envisioned. Yet as she recreated it her memories of the past are animated into the future. Embedded in the materiality of the design is Thea’s biography which extends beyond the fashionability of the shoes.

The conceptualization of the design for the ‘French Maid’ shoe was created with the assistance of exploratory sketches and a sourced last and heels. While Thea manually cut, stitched and lasted these materials, her husband, James, carved the woman’s legs by hand out of the wooden heels, which were to be enamelled in black afterwards. The ‘French Maid’ shoe embodied both Thea’s creative inspiration and the practical activities which she and James had imposed upon it during the shoemaking process. Permanently embedded within the design’s materiality were these individuals’ particular skills of dexterity, as the knife was guided to cut the material, or carve the wood, and the needle and thread followed the hand through the motions of stitching. Creativity for Thea is ‘experiential’. Ideas come from her engagement with the physical world and her shoes are created through a sensorial response to materials and forms. Thea’s design ideas are externalised through the process of sketching where they are explored and confirmed (Lawson, 2005). Following from this the selected materials and forms are then combined through an embodied practice of shoemaking where the hand manipulates materials onto forms. The presence of the hand and its performative actions lie hidden, masked by the aesthetic exterior surface of the designed shoe. At the start of the creative process Thea has imagined how the shoe may look in her head but it is her body which has materialised it. Thea’s ethnographic dialogue represents how the studio based designers of this study worked. Their design was a process of continual experimentation and reflection, engaging with materials, ideas and forms that would eventually become a shoe that would be sold commercially.

It is creativity as a material and embodied process that I was able to experience as I moved from ethnographer to reflective practitioner. Learning to design and make shoes brought understanding of the technical and practical skills needed to cut, stitch and shape flat materials such as leather and suede over the three-dimensional shape of a last (the wooden or plastic form on which a shoe is constructed. This is used to make the shoe and it directs the final dimensions in terms of width, height and toe shape). As I moved through the different repetitions and actions and witnessed the flat material change into what would become the aesthetic exterior, I felt the transformative processes. This phenomenological approach enabled me to engage in the practical creative processes of shoe design, and importantly to reflect on the ethnography with the designers. It was integral to understanding the feeling of processes, the role of the senses and the subsequent dialogues between practitioners and their practice. What this addition to the methodology brought was a different form of ethnographic knowing and a way into the designers’ own experiences (Pink, 2009). Design is understood as a process that combines knowing and doing, and as a researcher I needed to learn how to do, to better understand and describe creative actions.

Thea Cadabara is one example from many of the dialogues that the ethnography created. The observations and interviews revealed the designers’ experiences and processes of creativity, and as they talked, they reflected on their creative past which was inextricably part of their own biographies. In contrast to Thea, Joseph, was a designer who conceptualised and sketched his designs, but would then have them made in volume in an Italian factory. This part of the creative process was, for Joseph, often rife with tensions. Negotiating prices and payments was often challenging, and, in some cases, the factory would refuse to make a design as it was too complicated. In this case his creativity was compromised by the needs of the commercial system. His narratives stressed the desire for creative freedom and while commerciality impinged on this at times, it also gave him the opportunity to continue creating. The findings present both a literal and a romantic reflection on creativity. Romantically the designer is creative, but literally this creativity is structured according to the end goals of the commercial fashion system.

Conclusion

Ethnography has revealed how shoe design actually happens for these particular designers. At a time when there is an increasing focus on design and the end user, this study puts the focus back on the designer. It confirms that design is, for these practitioners, a process of observation and reflection. As they engage with the world around them and the materials of creativity, they become inspired to make shoes that both reflect their individuality, as well as conforming to the needs of the commercial wheel of fashion. Through ethnography these processes are unmasked and the designers’ personal narratives illustrate not just how they practice, but how they experience creativity. ‘The making of a product involves the objectification of one’s work, and an object may thus be said to permanently embody an aspect of one’s practical activity’ (Thomas, 1991: 16). Embedded within the aesthetic exterior of the fashionable shoes are each designer’s cultural and creative biographies. What ethnography has achieved is to give a voice to these designers.

Exploring the practicalities of design from these individual perspectives, highlights the designers’ contribution to the social and material world, for which their designs are destined. The study confirms that objects do have meaning before consumption, and it is the designer that invests them with this meaning (Attfield, 2000). Ethnography’s value has been to observe how design happens, but the narratives are key in showing how, the process is meaningful and, how, through the created objects, the designers make sense of their place in culture. Shoes, as fashion, may have a limited life, but, the designers’ narratives give these creations a future permanence that extends well beyond the temporality of fashion.

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Transformation of traditional rice cooking utensils into modern design in West Java Indonesia

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ABSTRACT

The development of modern electricity-based household appliances (home appliances) in West Java province Indonesia nowadays have shifted the traditional use of household appliances that are generally a craft product. All traditional rice cooking containers such as steamer made from woven bamboo shifted by electric rice cooker that offer a simpler cooking process. This phenomenon occurs not only in urban areas but also in the rural areas. In turn, this Sundanese ethnic artifact will be marginalised and disappear. As one of local cultural artifacts that have long been used in staple food cooking activity, the existence of steamer should be saved and continue to present in modern life in the context of local culture sustainability.

This paper uses the ethnography method to observe the craft-based traditional rice cooking utensils in West Java Province Indonesia. The experimental methods used to examine the possibility of transformation of the rice steamer made of woven bamboo, as case study, into modern design component. The method applied in the form of sketches and computer-based montage as a creative effort to transform the steamer, based-on its shape, into a suitable component that is as lampshade. This paper demonstrates the idea that craft that have been replaced by modern product can be transformed, as component of modern design. It is can be seen as an effort for sustain an ethnic traditional heritage and a representation of local culture-based design.

Keywords
transformation, traditional craft, lighting design

INTRODUCTION

This paper is based-on an on-going research project about the transformation of traditional artefacts into modern design in the ethnically Sundanese province of West Java in Indonesia. The case study is a traditional rice cooking utensil made of woven bamboo. This research is based-on the condition of traditional rice cooking utensils that are nowadays replaced by modern electricity-based utensils. The penetration of modern, electrical-base equipment is evident not only in urban areas but also into the countryside, as it gives more convenience and practicality in the process of cooking rice. The role of traditional rice cooking utensils, as well as other craft products is under threat. As predicted by John A. Walker (1989) the majority of craft products will disappear.

On the other hand, Peter Dormer (1982) states that today more and more people are becoming more interested in craft because they want a different lifestyle. There is a desire to not only use factory-made equipment that is completely plastic but something different, as an alternative and an expression of different tastes. Dormer's statement provides some fresh air for craft-base product development and gives energy to the creativity of designers, who are able to transform the world of craft product design with innovations. One idea is to change the function of the utensils to cook rice.

What Peter Dormer noted and also Daniela Sangiorgi explained on transformation design (2010), in a modest way also can be found in Bandung, the capital city of West Java Province Indonesia.
The trend to use the marginalised craft-based utensils arises in someplaces. They use the craft-based traditional utensils to create a local and homey atmosphere. In an age full of modern industrial products, this trend looks interesting.



Figure 1. Rice Steamer transformed into hanging lampshades and banner decorations.

The findings above shows the ease of a rice steamer transformed into hanging lampshade. The conical shape of rice steamers creates the lampshade so it does not need to be changed or modified. People transform steamers into lampshades for the way it looks. The weight of the steamer is relatively light so it can be hung as a hanging lampshade. To hang it, it is simply by make a hole in the pointed part for cable channel.

The aim of this paper is to point out the transformation of the unused or replaced traditional craft that is rice cooking utensils into modern design. The objective is to sustain the traditional artifacts such as rice cooking utensil to be continued in modern life and for that purpose it needs to be transforming into modern design.

To understand the Sundanese traditional rice cooking utensils I used ethnographic methods by visiting traditional villages such as Baduy community in Banten and Kampung Naga in Tasikmalaya West Java (Jamaludin, 2011). Then I experimented with computer-based montages. I used rice steamers with others materials to find a wide range of possibilities composition of rice steamer and/ with other materials for lighting design.

Traditional Rice Cooking Utensils in West Java Indonesia

In traditional Sundanese ethnic in West Java Province Indonesia, there are two rice cooking process. First and most common is steamed rice and the second is boiled rice. The main traditional cooking utensils for steamed rice are two containers as follows.

Cormorant

A cormorant is made of copper, aluminum and zinc. Copper cormorant has its own value to the Sundanese. The main function of cormorant as water container is to be heated by wooden burning stove and to put rice steamer on it during the steamed rice. Outside of the main functions is also used to cook steaming water for drinking and other foods such as tubers. The dimensions of copper cormorant are: heights 41-44 centimeters, mouth diameter 30-38, neck diameter 17, and bottom diameter 28-30.



Figure 2. Copper cormorant (eft) and alumunium cormorant (right)

Rice Steamer

The rice steamer's shape is conical with circular mouth size average of 25-30 centimeters and heights of 28-30 cm. Steamer made of braid woven of bamboo tali or bamboo apus (Gigantochloa apus). There are two woven style in steamer body. In the edge of steamer there is a woven fastener or hoo, rimmed the mouth of steamer (Sundanese: wengku) made of bamboo tape. In steamed rice cooking process, steamer used as container to filled up with unhulled (or uncooked) rice and to put on the cormorant. Hot steam from cormorant steamed rice inside woven bamboo steamer.



Figure 3. Rice steamer made of woven bamboo (from left): top view, side view and tree dimensional view

Experiment

The first step is doing further with what people did in Bandung, that is transformed steamer as hanging lampshade. They just perforated the tapered section for cable channel while broken woven and cable sealed with adhevise tape. To make it look good, neat and "designed", in tapered section I added metal cone-shaped to cover the broken woven that perforated for cable chanel.



Figure 4. steamer hanging lampshade

Innovation on Rice Steamer Shape

The second step is making a small innovation on steamer with the common shape of lampshades as refference. According to Steve Brielmeir (2015), lampshade are divided into four main groups based on the ratio between the top and bottom dimensions and the overall proportions of the shade. They are drum lampshade, empire shade, bell lampshade, and coolie lampshade. Empire shades is a cone-shaped without tapered section. The rice steamer has possibility to shape like empire shades by cutting the tapered section about 30% of the height, the less density woven part of steamer. The rice steamer then looks like empire lampshades.



Figure 5. from conical shape to empire lampshade shape

To apply this into real rice steamer will leave the broken woven in the cutting section. To make it presentable, the edge of cutting section need to be rimmed by bamboo tape as in the mouth section. This empire-looks rice steamer then use as lampshade for varius type such as table lamps, wall lamps, floor lamps with computer-based montage.

Table Lamp by Stacking Steamers

Empire shade-looks steamers stacking in opposite composition using two, three, four and more steamers with the same and different dimensions. The bigger dimension of steamer put on top and create a roof-like shape. In two opposite stacking, I put wooden base to stabilised the steamers and also to make steamer more visible The advantage of this stacking system is that the base also serves to diffuse light it emits. The vertical repetition shapes of opposite steamers stacking create a unique shapes. In taller steamer stacking can be mounted two or more light bulbs to create the same quantity of light that diffuse from the steamers.

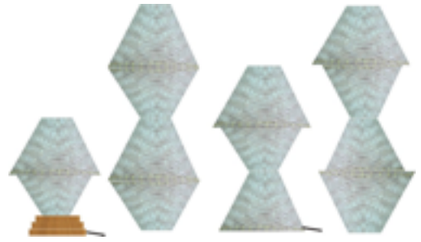


Figure 6. Stacking empire looks shade of steamers: the same dimensions and different dimensions

Steamer with Different Material Bases

Study from the montages of empire-look steamer lampshades for table lamp with various bases resulted the various but also spesific characteristic of table lamps. The bases such as iron rod, tubular metal, wood, and ceramic vas create contrast and harmony at the same time with steamer. Wood and bamboo are natural material creates a harmony composition but the shape of steamer and perpendicular wooden base create contrast. The woven bamboo is quite new as lampshade and the uniqueness come from the diagonal pattern of woven bomboo.



Figure 7. iron rod, tubular metal, wood, and ceramics as bases with steamer lampshade

Wall Lamp Steamers

For wall lamps, intact steamer can be used and to stick the steamer to the holder, the steamer tapered section covered by metal cup, as in hanging lampshade above, and continued to the holder. The empire-look shade steamer also look fit to use as wall lampshade.



Figure 8. steamer lampshade for wall lamp

Floor Lamps

The last is montage study of floor lamps with steamer lampshade with empire shade looks. Intact and cutted steamer can be easily fit as lampshades. To create a good composition, The diameter of tubular rod should be fitted with size of steamers.

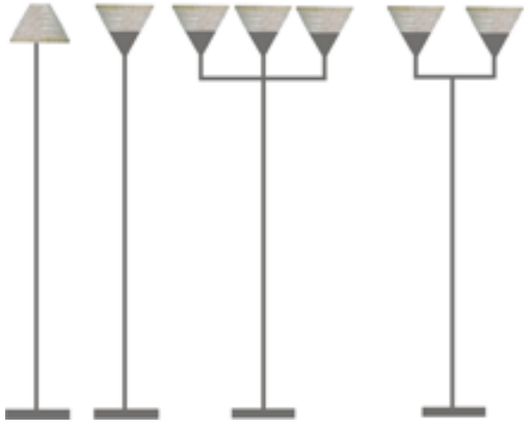


Figure 9. floor lamps with steamer lampshades

Conclusion

As a local genius artefact, the traditional rice cooking utensils however are the artefact of local culture and for sustainability reason, they are needed to be put into modern age. In the other hand, interior design in tropical region needed a local and tropical artefact to create a local identity atmosphere. Decoration or ornament of traditional architecture usually used as local identity but in this research I add this purpose by traditional artefact, the most important part that is rice cooking main utensils, that transformed into modern design such as lighting design. This paper shows the possibility of transformation utility or function from traditional into modern. The objective is to open a wider possibility.

From the experimental development of the use of the rice steamer for various lampshade designs above it can be concluded that the opportunities to develop craft products into the design, especially the craft products that are no longer used as the starting point, has a great chance. Natural materials such as bamboo are the raw materials available in nature are relatively easier and shorter in processing. To be able to compete with the products in the design of the armature lights, it is necessary to improve the quality of manufacturing of the steamer, for example, the selection of woven bamboo is better and the quality of the process of making webbing must be improved design of natural materials can satisfy the demands of eco-design or green-design that is now the world

major issue. To be able to perform in the realm of design, craft products only require relatively little modification and addition of materials that would make it seem as product design.

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Chinese international students at University of the Arts London: changing perceptions on creativity

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ABSTRACT

This research paper is an illuminative study on how Chinese students at the London College of Communication (LCC), University of the Arts London (UAL) perceive and experience creativity within themselves. It employs an ethnographic, insider, narrative and reflexive approach, where insider contextuality forms an important methodological layer of interpretation and analysis.

UAL is currently the 8th top recruiter of international students in the UK, and the only specialist art and design university in the top twenty. Chinese students are now the largest group of international students at UAL, with 4,000 graduates working and living in China, the university's largest alumni community outside Britain.

Through an initial series of conversational and relational interviews with a small sample of Chinese undergraduate students, fresh and diverse subjectivities and connections are discussed. Creativity becomes the lens that opens up a wider examination of students' motivations and experiences. Interviewees talk about their self-reflections, identities and personal creativity in a both discipline-based and more holistic contextual way: relating their personal experiences of coming to the UK, often citing the struggle and adjustment being away from family, with a new critical distance from the Chinese socio-cultural realities. The sense of self that arises from negotiating challenges of independence perhaps compels international students to become more resourceful, flexible, creative. In this way, creativity can be learned, taught and develops with life experience. (Csikszentmihalyi, 1996)

This examination of creativity and agency of Chinese students indicates themes and insights for an expanded longitudinal ethnographic study over the course of their three year arts and design bachelor degrees. The research has also developed into a staff/student collaborative co-design project with an aim to explore and support Chinese creativity at UAL and beyond.
Please find a short video trailer accompanying the paper here:
https://youtu.be/HFp06biW9iA

Keywords

chinese creativity, insider research, human-centred design thinking

Context and Methodology

This illuminative study arises from a long standing interest and evolving relationship - personal, professional, artistic and ethnographic – with young Chinese creatives, and Chinese creativity in China and in the West. Brought up in a Chinese Canadian family context that did not value artistic, creative and expressive activities as anything more than a hobby, I have spent years asking myself similar questions to those I am now asking students through this research: what do you think creativity is, and do you think you are creative? In what way are you creative and how can you be supported to be more creative?

Susan Clegg encourages us to problematise and probe the nature of our own insider knowledge: "we are, as it were, studying ourselves" (Clegg and Stevenson, 2013) As such, the research methodology of this study: the identity, reflexivity, tacit assumptions and positionality of the researcher in relation to the interview subjects, forms an important layer of the research and analysis. "These understandings are formed through the researcher's experience, enhanced by the perception of and dialogue with others, and his or her position in the world" (Drake, 2010)

In 2006 I started working as a creative director for an American-based experiential agency set up in Beijing China that had a couple of Olympic sponsor big brand client contracts. I was hired for my Western education, comfortable with North American and Chinese culture, customs and communication, and able to work across diverse mediums (architecture, events, video, exhibitions, interactive, entertainment). The company explicitly explained that local Chinese designers, even if educated abroad, did not have the creativity, vision and personality to handle international projects, budgets and clients. Perhaps as a consequence of this perception, most of the managing directors and creative directors in my company, and noticeably across many of the international creative agencies in Beijing and Shanghai at the time, were Westerners or overseas Chinese.

I worked with several young twenty-something local Chinese designers and production team members (graphics, illustration, 3D, animation and video) and would try different ways of communicating and giving direction to get more interesting results. I found that they took specific direction well, and were technically competent but did not seem to come up with bigger concepts, alternative options or new ideas very easily. I assumed that it was a cultural difference where Chinese were not brought up to 'think outside of the box' and consider things from shifting contexts and perspectives. As a director and mentor I was interested in how to

encourage and develop more creative responses from these well-trained young Chinese designers.

In making the transition from creative director at a big four agency in Beijing, China, to a lecturer and course leader at LCC over a year ago, it has been fascinating to see where and how Chinese students of art and design are living and being educated, at UAL in London.

BA Design Management and Cultures is a fairly young course offered at LCC in response to emerging industry trends that see the growing demand for training in disciplines like design management, service design, strategic design, design innovation, marketing, leadership and entrepreneurship. It is a hybrid course that brings together strands of management, communications, design cultures and design practice. Therefore it promotes a broad view of design, embracing interdisciplinary, collaboration, business and creativity. I have been particularly interested to see the development of first and second year Chinese over the past year, some of whom were interviewed for this short research paper.

In our first meeting, I talked about the inspiration and motivation for this research. We discussed ethnographic research in the context of 'design thinking': where key learnings and skills revolve around live user research, empathy and discovery, co-design and iterative redefinition of the research question or design challenge. We explicitly located this initial stage of research in the design thinking process, towards the development of a brief for a larger design project with an open-ended form and outcome.

Issue / Wider Context

UAL is currently the 8th top recruiter of international students in the UK, and the only specialist art and design university in the top 20. In 2014-15 almost 90 000 Chinese students studied in the UK, according to the HESA, which accounts for well over 10 billion pounds to the UK economy. The number of first year undergraduates from China in the UK, is now equal and surpassing the number of EU students. Chinese students are now the largest group of international students at UAL numbering 1,538 in 2014/15, with 4,000 graduates now working and living in China, now the university's largest alumni community outside Britain.

Across UAL, home and EU students average a higher level of attainment, with 67% and 69% respectively for achieving a 1st/2:1 degree marks, compared to 46% of international students (there is no separate statistic for Chinese international students). This is mirrored by 2015 HESA statistics which, in a study of finance and science undergraduate students, found this to be 68% of all students, compared to only 42% of students from China. While this gap in attainment could be due to a complexity of factors, including language proficiency and cultural approaches to learning, in the context of an art and design university, this is often addressed in terms of creativity.

It is commonly viewed, even echoed by myself, that Chinese students seem to 'lack creativity' or are somehow less creative than their western counterparts.

Chris Wainwright, deputy vice-chancellor of UAL is diplomatic in this 2015 interview for the South China Morning Post:

"The systems of learning in the UK and Europe are very different... I always try to ask Chinese students to relax a bit and be more experimental. If they don't produce a perfect [piece] but some interesting ideas, we can help them to develop those [ideas]."(Zhou, 2015)

Dr Yong Zhao, author of Who's Afraid of the Big Bad Dragon? on Chinese creativity, asserts that the Chinese education system is "incapable of supporting individual strengths, cultivating a diversity of talents and fostering the capacity and confidence to create". Therefore, as China rapidly develops and requires innovators, thousands of students are being sent to the UK to learn "outside-the-box creativity". (Archer, 2015)

With many expert opinions, diverse voices, assumptions and cultural baggage - what can this research project attempt to add to the conversation?

The contextual motivation to this project is a real curiosity to examine and allow agency to whatever Chinese creativity is, on a personal and authentic level. The insight and subjectivities from the Chinese BA Students who come to UAL for at least three years to study on their undergraduate degrees, and sometimes go on to do MAs, are an excellent sample to study changing perceptions of creativity. I hope to be able to listen to my students' diverse lived experiences and emerging identities, from my proximity to students as a tutor, course leader and as an overseas Chinese in London at LCC and UAL.

Creativity

How do art and design students perceive the concept of creativity, and consider creativity in themselves? It is a very general question: one which invites infinite subjectivities and interpretations. Creativity has been the subject of intensive research and literature across a myriad of disciplines. It is UAL's raison d'etre: we discover, foster, develop and teach creativity in art and design.

So what do we even mean by creativity?

Creativity can be generally defined as a phenomenon by which something new and valuable is formed. Mihaly Csikszentmihalyi, psychologist and current creativity pioneer distinguishes between three usages of the word, and focusses on creativity with a capital C referring to individuals who have changed some aspect of culture in a significant way. (1996)

For our purposes, I prefer Sir Ken Robinson's simple and holistic and inclusive definition of creativity as 'applied imagination':

"Creativity draws from many powers that we all have by virtue of being human. And like many human capacities, our creative powers can be cultivated and refined. Doing that involves an increasing mastery of skills, knowledge, and ideas." (Robinson, 2014)

This research project attempts to capture the youthful emerging learning stages of these Chinese students' journeys towards discovering and developing their own creative capacities and talents.



Image 1. Foreign Policy, 23 June 2015

Top 20 largest recruiters of international students 2014-15

Institution	postgraduate students	undergraduate students	Total number of international students
University College London	7,200	6,345	13,545
The University of Manchester	5,650	6,565	12,215
The University of Edinburgh	4,530	5,550	10,080
Coventry University	3,715	5,385	9,100
The University of Sheffield	4,485	3,965	8,450
Kings College, London	4,205	4,140	8,345
The University of Birmingham	5,780	2,520	8,300
University of the Arts, London	2,015	6,130	8,145
Imperial College of Science, Technology and Medicine	4,235	3,730	7,965
The University of Warwick	3,695	3,730	7,425
The University of Oxford	5,190	2,155	7,345
The University of Glasgow	3,675	3,665	7,340
The University of Nottingham	3,075	4,170	7,245
The City University	4,205	3,000	7,205
London School of Economics and Political Science	4,995	2,055	7,050

Table 1. UKCISA (2016)

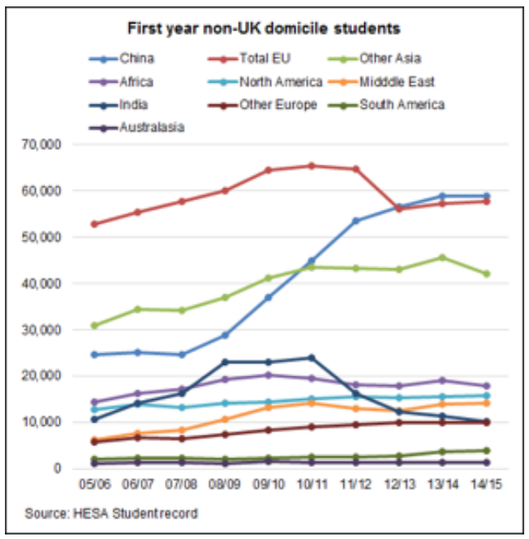


Figure 2. First year non-UK domicile students Soruce: https://www.hesa.ac.uk/free-statistics

Results and Discussion

These interviews of three international student Chinese women, similar in age, on the same course, still present a diversity and depth of perception in regards to creativity. While certain aspects of their backgrounds and experiences are comparable, their values, motivations, practices and identities around creativity seem quite different.

When first asked "Are you creative?", Interviewees initially responded with humility and self-doubt, referring to the conventional understanding of creativity to refer to visual design skills.

"I feel that I'm kind of creative, but not really creative cause I'm not a designer." (Student C)

"I'm not sure if I'm a creative person, but I want to be a creative person...I'm doing an internship for a small company and the director always said I'm a creative person. Before that I never thought I was creative person. Is that because (they) didn't pay me and that's why they said that to me?" (Student B)

However through the conversations, the interviewees each started to talk about their own self-perceptions and personal creativity in a more holistic and contextual way, related to their personal experiences of coming to the UK, often citing the hardship and adjustment of the first year away from family and China. Perhaps just the act and experience of coming to a completely different culture, negotiating the changes and challenges of independence, college requirements and the English language compels international students to be more resourceful and therefore enhances creativity. "Therefore creativity does not happen inside peoples' heads, but in the interaction between a person's thoughts and a sociocultural context." (Csikszentmihalyi, 1996) In this way, creativity can be learned and taught, and seems to develop with life experience.

Student B reflects on her changing identity and recognises that she is becoming a more creative person.

"When I start to study here, people around me they are changing me. They keep talking creativity and design and how to be yourself, how to represent your personality. It stated to get me thinking about my personality, how I want to be, who I want to be in the future."

Student A talked about the experience of isolation when she first came to the UK, and the differences she often notices in daily life activities between the UK and China.

"Yes, absolutely I'm creative in that way. I always compare… Especially when I talk to my parents… because I have a different experience here, then in China."

Student A would often pause to think, perhaps translate and censor herself. "Things happen in people's heads during the interviews that are not recorded," (Drake, 2015) With tacit insight into Chinese society, I sensed that she was careful and measured with her responses, most likely due to her family situation as her parent's work for the military, which necessitates privacy.

"I'm not sure. It's really complicated… There are lots of troubles in my life that makes me I think designing services are really important for a brand, and for people like me."

When asked: what is creativity to you, the student's responses were markedly different and seemed to show how each of them is starting to develop an area of interest: to explore and define a different field. Csikszentmihalyi says that "a person cannot be creative in a domain to which he or she is not exposed…. Creativity can be manifested only in existing domains or fields." (1996)

Student A has become interested and inspired by the idea of designing experiences and services, and using design and creativity to effect change.

"You mean in this world? I think creativity is from real life… Especially when you consider design as a tool to solve some problem, then you begin thinking. That's the point is to get people thinking about their life...For now I think design is not just design. It's about a revolution. You think something needs to be changed and it's not about something beautiful or gorgeous."

While Student B describes a creative person as someone who can take risks and displays characteristics of an entrepreneur and leader:

"I think creative should be that you have ability to take control of everything and you make and decide the direction that you… or your company should take and you can explain why, and after people will follow you and you can give them a good result."

The last question asked in the interviews related briefly to what the students thought could help them (or other Chinese students) be more creative in the university context. As expected, all three of the students mentioned more tutorials, however the responses were actually quite interesting and illuminative. They spoke of the value of mentorship and guidance, the external validation by tutors (or achieving good grades) being 'creative' as helpful, and that the creative cultural environment of London as being stimulating.

Student A: I think more tutorials, one-to-one. Especially for those who don't understand course work, project work…

Interviewer: Could this be from older students?

Student A: Yes, maybe…

Student B: More tutorials and projects that are relevant to my future.

Student C: I think because some Chinese students come here and are not clear what they are doing. Or maybe they don't know what is the pathway of their future. Or they may be confused being in London, in a foreign country. So I think that tutorials are more important....

In comparison with universities in America, they have many optional classes, which we don't have here. For instance, maybe I would like to learn a foreign language… another language, but I have to pay! The purpose should be to gain skills…We lack extra-curricular activities here.

Future Developments

Many insights and directions could be extracted from this short study. To expand the research into a longitudinal study of students across their three years at UAL, would be useful for educators and creatives. This would require a re-framing of the research question and further analysis of methodological considerations.

Since this initial research less than six months ago, a group of lecturers, tutors and students at LCC and UAL have expressed interest in developing a collaborative design project around exploring Chinese creativity and innovation, encouraging further research, discussion and creating networks across disciplines and cultures. The initial meetings and event will take place in autumn 2016.

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Being there: impersonating the designer-researcher-participant

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ABSTRACT

In small-scale design research projects, researchers often take on many different roles: designers of artifacts or activities, co-present participants, and analysts of video documentation. There are some obvious risks with one person fulfilling many different roles in a project: A designer may be biased towards her own design proposals, and have difficulties distinguishing between the actual form of the prototype and the intentions behind it. In addition, adopting dual roles as both protagonist and video analyst creates risks for biased interpretations. Referring to examples of fieldwork in educational settings, a conceptual division between design and enactment is proposed as a tool for mapping out and disentangling the different roles of a design researcher in a small-scale project.

Keywords

design-based research, participant observation, educational institutions

INTRODUCTION

The approach and methodology of design research are often based on the assumption that there is a research team engaged in a project rather than a single researcher. As design research expands its outreach to also include design disciplines in which designers often work in smaller teams or by themselves (such as graphic design, or in educational settings), design researchers face the dilemma of downscaling the research approach in order to make it fit small-scale projects. This paper deals with one aspect of downscaling: the challenge of one person taking on multiple roles or functions in a project, being a producer of artifacts, a co-present participant and post-hoc analyst.

I will use the work of the Design-Based Research Collective (DBRC) in order to anchor some of my arguments. DBRC is group of researchers within educational sciences, working on research in the classroom, and the problems and solutions that they highlight are relevant for the argument in this text.

Figure 1 shows four stills from video recordings of children exploring a prototype for a mathematical game. The setting is that of the leisure-time center, where children spend time after the school day is over. The researcher is me, and in the video sequences I introduced early prototypes of a game in order to let the children play it, or – if nothing else - play with it. This leads to the issues I want to discuss: The first is the dual role of one person as both designer and participant. The second is the dual function of the researcher as both video analyst and protagonist in the video data, talking and interacting with other participants.

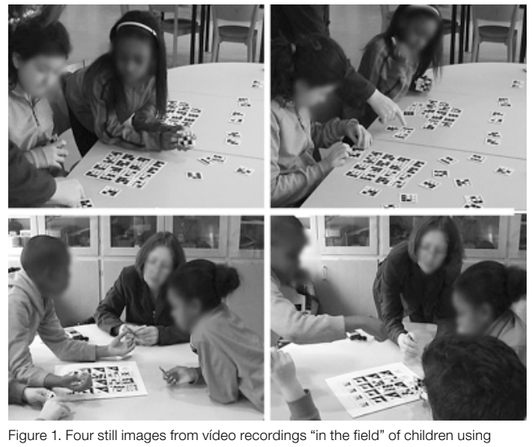


Figure 1. Four still images from vídeo recordings "in the field" of children using prototypes for a mathematical card game. For more information on the game, see http://symmetry.one.

Designer and Participant

The first conflict between dual roles of the researcher stems from bringing unfinished designs or prototypes out in the field for different kinds of experiences with future users. I see this as an integral part of a designer's work, but it brings about some complications. As a participant in the setting, I face the need to facilitate the intervention: explaining when explanation is needed, filling in with new cards, assisting players, modifying rules in order to resolve malfunctions.

If the aim is to get "objective" feedback on the prototype's strengths and weaknesses, I should refrain from intervening. On the other hand, if the aim is to keep the game playing for a while, and have it recorded on video, facilitation is needed. The difficulty is to keep track of the progress of the game-play and to what extent it is shaped by the game and to what extent by the interventions on-the-fly, both my own and those of other participants. My actions are thus divided between two conflicting goals: facilitating the intervention and promoting objectivity by refraining from intervention, which according to the DBRC regularly causes design researchers to find themselves "in the dual intellectual roles of advocate and critic." (DBRC, 2003)

Returning to figure 1, the images show me pointing, explaining and arranging cards. As with many early game prototypes, gaming was often interrupted by malfunctions, which in turn caused conflicts or misunderstandings between players. What is not visible in the pictures – but clear in my memory of the situation – is that I felt responsible for my prototype, and I was eager to fix it in order to have it played. In fact, in later sessions with these children, I switched to another game for the field studies in order to have a game that was playable right away and that allowed me to feel less proprietary. This was a "quick and dirty" solution – with some costs for the project– but in a time-pressured situation it allowed for me to let go of my concerns about the prototype in its present state, and gave the participating children the opportunity to play a game without malfunctions.

Protagonist and Video Analyst

The second conflict of roles is that of the video analyst in charge of analyzing video data in which she is herself taking part as a participant. This creates an asymmetric relationship between the analyst and participants: as an analyst I am well aware of my own ways of acting, and I may remember the reasons for acting in a certain way, but I do not have the same access to other participants' intentions. Disentangling becomes even more complex as learning environments are almost per definition "messy", with groups of children interacting at high speed, rich in surprises and unpredictable conflicts. Teachers – and often also visiting design researchers - have to take decisions on the fly in order to keep up with the course of events.

"Complications arise from sustained intervention in messy settings. A single, complex intervention (e.g., a 4-week curriculum sequence) might involve hundreds, if not thousands, of discrete designer, researcher, and teacher decisions. […] In these situations, causality can be difficult to decipher and disambiguate". (DBRC, 2003)

A teacher's professional tasks include both off-line preparation of teaching materials and learning activities, and on-line enactment together with learners. A designer's work description has traditionally focused on developing artifacts, and participatory skills have not been seen as a part of job. But as co-design and participatory approaches gain in importance, enactment skills also become increasingly important for designers.

Design and Enactment: Between The General and The Particular

According to Krippendorff, meaning-making in design is first and foremost done by users, and each use situation may lead to its own unique sets of meanings (Krippendorff 2006). "Meaning" in this case is a construction, the bottom line of how a design artifact is used, attended to, and talked about. Taking the perspective of Krippendorff, the meaning of a design artifact "per se" and in general is de-emphasised whereas the meanings attached to it by particular users in a particular setting are emphasised. But how can this understanding be operationalised in design practice?

In documenting the research presented here, I followed the recommendations of the Design-Based Research Collective. They propose a separation between design – in the sense of a plan or reproducible structure, with its attached artifacts, and enactment – the unique process of deploying the plan. The setting discussed by DBRC is classroom research. Design in this case may refer to the outline of a lesson or learning activity, including various artifacts (power-point presentations, paper assignments…). The reason for this separation is that a design may render very different enactments, depending on factors that relate to the enactment rather than to the design. Institutional traditions, the mood of learners or teachers on a particular day, learners contributing or picking up on each others' proposals: all these things make each enactment unique. The problem of the researcher – who may be the designer of the learning activity, the teacher, and the analyst – is to document the outcome in a way that allows her to separate the effects of the design from the effects of the enactment (DBRC 2003). Compared to Krippendorff above, the understanding of the tension between the general aspects of a design and the particular details of meaning-making processes in a specific setting is the same.

When the designer, the development phase of a design project, enters a setting as a co-present participant, she acquires another order of powers to intervene – not in all settings, but in the particular setting of the study. These means include talking, gesturing, interacting with others, and actively responding to the course of events. In this sense, the particular school, classroom, or prison cell that a researcher visits, regardless of how representative for its category it might have been before, it stops being so as soon as the designer enters the premises: the "being there" of the designer changes the setting.

Closing Remarks

The notion of design is changing, and so are the ways we teach and research design. Collaboration and communication are important parts of the design process, and designers need the skills for navigating between different settings; "the field, the lab and the showroom" (Koskinen et al. 2011). Design research reflects this notion of design as multidisciplinary and collaborative - a profound change from older concepts of artistic practice (including certain varieties of design) built upon the premise of creative work as solitary, involving the minds of skilled individuals.

My position – both as a design researcher and an educator – is that design research should be a cornerstone in any type of design education, and that field studies (with and without prototypes) is a natural part of any design activity. Hence, there is a need to scrutinise the challenges arising as designers shift into the dual, often conflicting roles as both participant observers and video analysts, and to explore strategies and conceptual structures that enable this shift without losing the rigor and transparency required for research.

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Learning in role playing: an ethnographic study on Chinese children towards a novel educational game model

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ABSTRACT

This paper presents an experience-driven educational game model inspired by a relevant ethnographic study on preschool-aged children in China. The model is particularly designed for creating engaging game based learning experience. Through a four-week-long ethnographic fieldwork in kindergartens and children's homes in China, the affinity between children's cognitive world and fantasy play has been found. More specifically, self-actualisation as an experience goal embedded in role-playing, a subcategory of fantasy play activities, demonstrate its strong potentials in bridging the serious educational purposes and captivating gaming experience. Based on the ethnographic findings and further the experience goal, a role-playing-based (RPB) educational game model is established. The model distinguishes itself by seamlessly incorporating educational purposes into a child's second-life in the game setting and further promising the achievement of the child's "flow state" in the gaming process.

Keywords
ethnography, children-computer interaction, game design

INTRODUCTION

The recent decade has witnessed a dramatic expansion of Chinese as a second language globally. With the reflection on the overemphasised English language in preschoolers' education emerging in Chinese society, the revival of learning Chinese traditional literature became a nationwide trend. Parents are hence paying increasing amount of attention to their pre-school aged children's education of their mother tongue. Notwithstanding the growing demand, educational products for preschoolers to learn Chinese fall short of both quantity and quality comparing to their English counterparts. The deficiencies in both content and experience design render children's Chinese learning process a task to finish rather than an instinct to follow.

The related works include Thomas Malone's study (1981) on the difference between intrinsic fantasies and extrinsic fantasies, in which he pointed out intrinsic fantasies provide two-way interaction between a player's skill and the imaginary setting.

In this article, a game model inspired by a relevant ethnographic study, which intends to address the given problems will be introduced. The game model and further the game established upon it allow pre-school aged children to learn Chinese in a memorable and entertaining way. Through an ethnographic investigation in China, children's essential needs and experience goals are grasped and transferred into building a concept of the game design.

Research Materials and Data Analysis

During September to October in 2015, the first author conducted a four-week-long ethnographic fieldwork in a city called Huizhou in the Guangdong province of China. She selected two kindergartens located closely as her research fields. In both kindergartens, the first author observed the children and their interaction with the staffs while working as an assistant teacher. During the fieldwork, she followed the same schedule of a kindergarten teacher and participated all the classes and activities the children attended throughout the day. Besides from the kindergarten observation, children's playing and learning activities were also observed in three children's home. In addition, an in-depth interview was conducted with the children's parents and kindergarten teachers.

It was on the playground. Ms. Luo allowed the kids to play with the large blocks scattered around. Soon after the teacher's permission, the playground turned into chaos. The boys and girls started to grab toys from each other. Since the blocks were relatively bigger than those indoor ones, some of the children decided to share blocks with others. Then I saw Cheng, the most naughty boy in the class, started to fight against Tian, the "good girl" for a piece of ringlike block. "This is our homeland. The foreign people are prohibited from entering" Tian shouted to Cheng when she was making her best effort to stop Cheng from grabbing her block. Seeing this, Tian asked her "allies" to join her fighting against Cheng. Cheng didn't make any verbal response but intensified his action. I could tell that Tian and the other girls were fighting even more difficultly. "Can you stay outside and help to defend our homeland?" Tian switched her strategy and said to Cheng, as she decided to share her "homeland" with him by seeing him as an "ally" rather than the "enemy". Cheng nodded and stopped fighting. Then, he started to stand quietly outside the block as a guard.	"Who has more than 25 yuan? The player who has more than 25 yuan will be rewarded with 1 yuan." I read the task card in the game named "Mathematic Monopoly". "I had!" Jin responded quickly. "How come you have over 25 yuan?" I asked suspiciously. "Look…1, 2, 3, 4, 5, I have five 5 yuan." Jin showed his cash to me with confidence. "OK…" I responded. 

Figure 1. (Left) Fieldnotes of setting 1; (Right) Fieldnotes and a photo of setting 2.

The Overlapping Reality and Fantasy and Learning From Virtual

As elaborated in the setting above, spontaneity as a trait is deeply embedded in children's fantasy play. Children can suddenly alter trivial things happened in real life into something of great importance occurred in an imaginary world without any previous arrangement. For example, the battle over the "homeland" in the Setting 1 was merely fighting over a block (see Figure 1. Left). In some extreme cases, the seriousness of children brought in the assumed setting made the author's doubt whether they were pretending to be someone else or they were just acting a different version of themselves. In that sense, we can even argue that what adults perceive as fantasy is rather the "reality" in the children's cognitive world since such "reality" happens so frequently that even can be regarded as norms in their life. Thus, not considering children's fantasy play in the design for preschoolers can be viewed as equally failed as not recognizing the merits of users' need in the design for adults.

Failed Educational Games

Jin, a six-years-old boy invited the first author to play a board game similar to Monopoly with him for more than three hours continuously (see Figure 1. Right). To the researcher's surprise, without learning mathematics in the kindergarten, he was able to calculate all the numbers correctively in the game. Quite opposite to his enthusiasm in the role playing based games, when the author asked Jin to introduce the educational games which come with the learning materials of EF (a global English education institution), he quickly went through all the games without showing any obsession. At a glance, however, there is no apparent difference between the EF educational games and the two role-playing based games, since all of them have interesting characters, task, and clear feedback mechanics. What leads to the educational games' lost in the overall competition against Monopoly and Dr. Panda's Restaurant for gaining Jin's attention?

Elements in Role Playing Based Games

To answer the question, the first author studied these two types of games thoroughly by observing and videotaping the gaming processes. Then, the first author boiled down the complex game mechanics into four key game elements: 1) role, 2) task, 3) goal and 4) Other Characters. In the analysis, the notable discrepancy in Jin's attitudes towards these two types of games could be ascribed to the educational games' failure in synthesizing the three key elements to an engaging imaginary life experience which meet the children's demand of self-actualisation. Just as Jin's mother explained, *"Monopoly and Minecraft, such (role-playing based) games mimicked the real experience of earning money and building city… The kids feel the sense of self-actualisation in them."*

The Role-Playing-Based Game Model

Based on the ethnographic research findings an educational game model for preschool-aged children inspired by the fantasy-play-based game is established (see Figure 2). The diagram demonstrates the interplays between the three main elements in the fantasy play: role, task, and goal. The role-playing-based (RPB) educational game model suggests seeing intrinsic fantasy

as the container, which wraps up all the game elements and the corresponding interplays. That is to say; the existence of all game elements, including role, task and goal, and the relationship between them would only hold under the specific game context. For example, the goal of “becoming rich” in Monopoly like games only makes sense in the game context. In real life, however, the goal can only be seen as gathering more pieces of paper.



Figure 2. The fantasy-play-based game model.

The Four Main Elements in The Model

Role - Role in role-playing-based (RPB) games entails the character, which the child plays in the fabricated game world. The virtual role is of great importance in the establishment of the game world since it plays as the primary factor in a child’s decision of joining the game. Thus, it is crucial to ensure that the role would promise children’s full charge of the virtual life and further provide them with the opportunities of self-actualisation. As Bornstern (1996) posits that powerful and mature characters are often preferred in pretending play.

Task - Task in the game context, as illustrated in the diagram, has a great affinity with the game’s instructional purpose. In other words, it is usually through game tasks that the young players attain certain skills or knowledge needed in reality. Although task operates as a contributor to the external goals in real life, it should be designed to serve both the internal and external goals. Only if the task rationalises itself in the given role’s life, will the players be intrinsically motivated in playing the game.

Goal - As the main factor to trigger the player’s motives in accomplishing game tasks, goal plays a significant role in designing a successful educational game. Goal is strongly associated with the children’s motives or needs in real life. Especially regarding Maslow’s hierarchy of needs, a well-design goal in the game’s internal world should facilitate children to pursue self-actualisation, which they are in great need of but often cannot attain in real-life settings. Once the goal is set to appeal to children’s need to acquire a “successful life” and intrinsically consistent with the role’s life and task, the children will feel naturally motivated to the game task.

Other Characters - Other characters as a main element in the RPB game setting, although do not possess a homologous counterpart in the real world, is strongly associated with the three other elements in the model. First, other characters are of great significance in shaping the characteristic of the game’s main role. Second, other characters could even be a task provider in the games. Third, other characters sometimes operate as a motivation trigger in the game setting.

Conclusion

From the game relevant ethnographic study in children’s environment, the role-playing-based (RPB) game model has introduced. Through an ethnographic study in China, children’s essential needs and experience goals are inspired and transferred into building the game model. This game model brings about several merits in educational game design:

- Grounded in the detailed ethnographic study in the real world, the game model provides convincing live examples of both its potential educating and entertaining effect.
- Being the ideation starting point of the actual game design in this thesis, the model would serve as an ideal brainstorming tool for future role-playing-based educational games.
- The model can also serve in the evaluation of role-playing-based educational game designs. Only with all the internal game elements well-balanced and connected to the external educational purpose, will the game maximise its attraction to preschoolers.
- With all the game elements strongly associated with the educational objectives and children’s actual needs, the model can mostly prevent the educational games from being too entertaining yet missing its initial instructional purposes.
- By holding a holistic and dynamic view regarding the games’ internal fantasy world, the discussion and modification of each game element would lead to the creation of a more intriguing fantasy play experience rather than a mere improvement of the partial game.

The RPB game model will be developed and implemented to build a game design. The game would be established to allow pre-school aged children to learn Chinese in a memorable and entertaining way.

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Design for cultural preservation - An investigation into the systems of traditional Laotian textiles

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ABSTRACT

The aim of this exhibition is to present the activities of our research/design group named design for, sponsored by Nanyang Technological University and the Ministry of Education of Singapore. It takes the audience through design for’s journey in working with textile motifs in Laos by exploring the Cosmic Serpent symbol meanings and the connections to the lives of the Laotians — through fieldwork, research, community collaborations, education and collaborative design — to co-create products with the community that are culturally respectful yet still relevant in today’s world.

The Cosmic Serpent, depending on context this is called Naak or Ngueak in the Laotian language, and Naga in Pali is an animistic figure that predates Buddhism. The most important themes about the Cosmic Serpent were narrowed down in the meanings of duality, fertility, and transcendence. These keywords became the starting point and the overarching themes for deeper exploration through visual maps and metaphors, this critical stage helped the team to translate abstract ideas, meanings and concepts into images and forms. The exercise also led design for to want to share its findings with the weavers and to do a collaborative design workshop. With this conceptual framework established, the team then decided to work with Laotian weavers to design three separate collections of products.

The exhibition takes the audience through a new design process approach so that the role of the designer became one of facilitator, rather than someone devising his or her own inspirations, because the main goal of this project was preservation of cultural integrity.

Keywords
meaning of symbols, social design, cultural preservation

INTRODUCTION

We live in a time of change. The great paradigm shift that has taken place between the industrial revolution and the digital age demands of us transitions that we neither completely understand nor have fully acknowledged. While technology has allowed us to move and create increasingly fluidly, even so we still live in a world full of material things and values.

Our passion for the material has led to overconsumption and, consequently, a polluted and out-of-balance environment. Humankind is now in a crucial moment of our history—a crossroads of survival—as our environment gradually becomes unfit to sustain us. Rignot (2014) forecasts that global warming has reached a point of no return, while Pimm and other scientists (2014) predict that if we do not act fast, humankind will be on the brink of mass destruction in the next 20 to 30 years. In short, our addiction to the material is gradually destroying our planet.

This calls for action, a real shift towards economic models that put people and the environment first.

Because the work of designers is closely related to the production and consumption of goods, they, too, must reflect on their own responsibilities and roles with regard to the environment. The author herself desired to make a shift in her own design practice towards more socially meaningful initiatives. Taking under consideration her location in Singapore, the existing resources there and in the region, and how a project might bear meaningful results, she decided to tap into the cultural wealth and craftsmanship of Southeast Asia. Laos was chosen because it is one of the few countries in the region that still preserves a strong relationship with material through its invaluable hand-dyed and hand-woven textile tradition. It would provide a suitable contrast to Singapore, a global city-state that rapidly saw such vital connections between people and their environment vanish in the last decades due to rapid economic development.

In 2011, with a group of alumni from Nanyang Technological University, the author created a research group called design for (www.designfor.co). The design for name was chosen as a catalyst for the possibilities brought about by design that takes a humanistic view, advocating cultural understanding and preservation. With design as its mediator, then, the group proposed the model shown below that brings together the three pillars of its research: meaning (understanding symbols and patterns); making (establishing systems of production); and sharing (systems of empowerment and dissemination).

Context

Many Laotians today live in a rural communal setting. Until the 1980s, most women hand-dyed their own threads with natural pigments and wove their own household textiles such as blankets, curtains and traditional attire. In order to better understand the Laotian textile tradition the group made several field trips, living for a few days within craft communities. As visual communicators, the team wanted especially to learn about the visual language contained in Laotian textiles. Graphic documentation of these visits focused on the most important motif in Laotian iconography, the Cosmic Serpent was used in many textiles produced for use in shamanistic rituals. Today the symbol continues to be significant to the cultural identity of Laotians.

Although the team had hoped to learn from the Laotian weavers themselves about the symbolic significance of the Cosmic Serpent in the context of their textiles, it soon found there was very little consensus among them, and even among scholars, regarding its nomenclature, meaning and various forms. This is because the patterns and the stories behind them have been disseminated orally through generations. Hardly any publications compiling the names and typologies have been released in Laos. It was therefore decided to focus research on this very topic, to find the connections between a pattern's shape, its name and meaning. Although this is an important part of a textile, it is nonetheless often overlooked in favour of materials and techniques used in production. The team identified the most important motifs and correlated their names and meanings as follows:

- Nak Phan Hang — duality
- Nak Taun Tao — fertility
- Kong (Khom) Nak — transcendence



Figure 1. Weaving patterns for Nak Phan Hang -duality collection

With this conceptual framework established, the team then decided to work with Laotian weavers to design three separate collections of products exploring these concepts and designs. In this way, research into the meaning of the woven patterns thus addressed the very building blocks of visual communication: shapes, materials, colours, and textures. Because the goal of this project was preservation of cultural integrity, it was important to the team to first establish authentic saliency of the patterns' meanings, so that the role of the designer became one of facilitator, rather than someone devising his or her own inspirations.



Figure 2. Kong Nak – transcendence collection

Conclusion

Through these activities we were able to identify and reveal the many layers of systems that sustain a living textile tradition in Laos. The inherent meanings of patterns, the materials involved including natural dyes and fibres, and actual weaving techniques were investigated. The team created product designs that re-established lost links between patterns, nomenclature, and meanings. It disseminated information to weavers through a workshop, organised several exhibitions to heighten awareness of these systems and the value of products made with respect for local culture, the environment and the craftsperson. Design for's work in Laos gave each member new understanding of what it means to have a relationship with material that is not based solely on economical values. It gave pause to re-think the ways of production in today's world.

The industrial revolution stripped objects from their stories. Machine-made goods removed the element of human touch as they disconnected people from natural resources and the environment on which those resources depend. It made us realise that we are so disconnected from the invisible layers in daily objects we use that most of us are not even aware of the many cases of exploitation happening in factories around the world in countries where labour rights are limited.

Because designers play an integral role in the production and consumption of goods, they must turn their eyes and ears to the voices, both those from the past and those here with us now in the present, behind material goods. It's their role to shine light on the unseen networks surrounding the manufacture of things, and help make those stories heard so that the people who create the products we use are acknowledged and celebrated. Then consumers will have the opportunity to respond and take responsibility for the systems they choose to support through their purchases.

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Reviving Hong Kong - old public housing estates

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ABSTRACT

'Reviving Hong Kong Old Public Housing Estates' is a series of four books divided by four chapters: Estate, Housing, Things and People. These are presented in the local Cantonese language in a joyful and narrative tone, in a 210 x 287 cm format. The books mainly contain photographs taken on warm sunny days together with some information graphics, collages and drawings. In addition to the books, sub-design items such as postcards with moody photos will be placed in the exhibit to attract readers. These will be accompanied by name cards for online promotion and the collection of feedback. Some decorative items, like a pair of plastic slippers and a bamboo fan, can also be placed in the exhibit to represent the iconic estates' relaxing feeling. Further, I suggest that some little folding wooden chairs be made available for leisure reading and discussion.

Due to high demand of public housing, many are built in recent years. I feel confused about new estates, not only because of huge number, but their look-alike boring copy-and-paste building appearance, together with similar big brand chain stores flock in, many time-honoured neighbor shops force out; variety of shops and goods narrowed. New estates are just where people go out and go back to their flats, served like a habitat with little human touch.

"We must not build housing, we must build communities." Mike Burton.

Contrast to old public housing estates, enclosed with kinds of iconic building designs and family-based small shops. Larger public spaces inside and outside buildings with less forbidden notices, neighbors can spend time together easily in buildings or local eateries nearby. Living is not just inside a flat, but one can mobile feeling belonged to the estate community.

However, destruction is always the tragic ending of aging estates, no complete estate community has ever survived under the non-democratic renewal policy. Government preservation is all about photos and glass-display relics representing old shops' ever existence and little NGO can help. Economic development is the priority, and preservation is for historical sites and tourism. Then how about the basic living for international citizens who deserve high quality of life?

Besides destruction, renewal is also the trend. Moreover, elders, the greatest users in aging estate are unaffordable to spend after modernisation of malls squeezing out sincere small old shops. Neighborhood and collective memory seems are old terms. Are social and cultural quality of life are backward in this modern society? One-third of Hong Kong people are living in public housing, and what is special about them creates what is special about Hong Kong. And I am afraid Hong Kong will become famous as a 'culture desert' with no characters and culture uniqueness, the cold loosen society with new generations questioning their identity. So, I hurry up collecting all endangered elements in old estates by photography and listening to local stories before they doomed to be disappeared, and gather them all into a book design project.

Keywords
Diversity, humanity, localism



Image 1. Artifect - Book Design; Books size : 210 x 287 cm

It is a series books divided by 4 chapters : Estate, Housing, Things and People. They are designed in local Cantonese language in a joyful and narrative tone, ontaining photography, information graphics, collage and drawings. Sub-design items are postcards, name cards, leaflets, posters. Decorative plastic slippers and bamboo fan give the estates' relax feelings, and little folding chairs for leisure reading and discussing.

Figure 2. Facebook page - 復興香港老屋邨

Concept statement

people + housings + things
= an estate
= a community
= vector for humanity and localism

if buildings and things are formed based on people, freedom to choice are given to people to accommodate and create diversified ways of life, thus an estate form a community and vector for localism and humanity.

Design statement

Through a wonderful and aesthetic design collection item which gathers the disappearing elements in old public housing estates, I wish the valuable Hong Kong values found in old in those old estates can be passed to the new generations.

Project objective

To promote and reflect on the disappearing Hong Kong values - localism and humanity;
To visualise the beauty in old public housing estates

Ideal objective

To energise and revive the old estates;
To raise concern on localism and humanity considerations in housing and city planning

Target group - Hong Kong post-90s youth & general public

Post-90s youth's characteristics:
- Born in prosperous society, may not have lived in public housing
- Young , energetic and enthusiastic to make HK a better place,
- social movement organisers, decision makers of future HK
- More curious and old Hong Kong things may seem new to them
- Born in the technology era, easy to reach them through internet
- more technology gadgets entertainments and less hang out in streets

General public's characteristics:
- One-third of general public live in public housing
- Many share collective memories there
- All concern housing & living these basic needs

Current target perception : History and preservation are far away from daily life. Old public housing is just an old and unattractive thing.

Desired target perception: In old public estates, we can find the rare local housing , shops and diversified living ways, they are so desirable and should be existed but how come they are losing so quickly nowadays, history, social , culture and daily life are correlated, as a Hong Konger , we have to do something to sustain these valuables.

Methodology

Research hypothesis

I assume that old public housing estates, no matter from old times until nowadays, are the vectors for Hong Kong 's humanity & localism.

5 research areas

1) why public estates are worth preserving , humanity and local stories in old public housing estates
2) buildings
3) things and
4) people
5) contrast between old and new estates

Research methods

(1) questionnaires to research youth's opinions and pursuit on public estates ; (2) interviews with older estate stakeholders like elders , shop owners, residents to collect their past story ; field trips to old public housing to do observations and take photos and videos ; (3) experiments like counting numbers of elders and small shops ; (4) books, newspaper, website , movies. And some research finding are finally turned into the design books.

Book content - a series of 4 books in 4 chapters

(0) ESTATE - Photo gallery & Preface, Concepts, Renewal Map
(1) HOUSING - Constructive Building designs Changes, Themed iconic old estate design, The blind public space, Journey to special old estate
(2) THINGS - The nonfunctional Mutual Aid Committee, Wonderful Estate Small shops
(3) PEOPLE - Elders hanging ways, Personalised Estater, Art of drying clothes

Conclusion

Let's explore the beauty in Hong Kong old public housing estates.

Memories and dreams, an ethnographic approach as a way to understand a different culture

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ABSTRACT

We might assume that our culture lead us to a specific way to read the reality, in fact, due to self and external reference as Wolfgang highlights in 2001, there is a 'real world which we cannot perceive as it really is'. For Archer, design is defined as 'the collected experience of the material culture and the collected body of experience, skill and understanding embodied in the arts of planning, inventing, making and doing' (1979). Furthermore, Margolin Victor and Sylvia suggested that the foremost intent of social design is the satisfaction of human needs (2002). While moving from west to east, the author was initiated to reframe the primary needs as designer and as human being. Collecting became an automatism; in addition the host society brought new ways to perceive and experience the body, and it perhaps 'influenced the manner in which emotions are felt and communicated' (Frevert, 2014). The paper will describe how a designerly way embedded with ethnography approach aimed to grasp the cultural gap via senses as tool to cultivate consciousness. The fashion project started almost unconsciously as way to collect personal memories and the visual richness of the unique local craft of South-East Asia became then something unexpected. Once showed in Italy and US, the physical outcome became nigh vanished in a sort of a collective imaginarium; a platform where to initiate debates. Aim of this experiment is to bring a new consciousness about the self and traditional cultures that often have been forgotten.

Keywords

Southeast Asia, emotions, body-consciousness

INTRODUCTION

With the word 'culture' we refer to 'spiritual culture, material culture and body culture, but these categories do not just range side by side' (Henning, 1: 2007). [1] In this paper is important to underline how 'Design has its own distinct things to know, ways of knowing the ways of finding about them' (Cross, 1: 2006). [2] The cultural shift fostered the author of this paper to reconsider himself as a designer and as a human being. The instinctive practice of collecting as a way to engage with a culture thus became a tentative to acquire knowledge as episteme and to gain the techne. Moreover Deyan Sudjic, director of the Design Museum, London, defines collecting as 'equivalent to the subtler pleasure of nostalgia or the recent past, and a memory of far-distance story' (2014: 98). [3] This act of collecting has led the author to embed the history of the country where he lives. In the same direction it is important to remark that our involvement with the world takes place, as it is, through the object said the Duck philosopher of technology Peter-Paul Verbeek and author Petran Kockelkoren in 1998. [4] As a full participant in the host society of Thailand, the author had four main levels of observation to fill the cultural gap, firstly by teaching design, second, to be invited to the main arts exhibition; third, urban and countryside explorations; fourth, extensive collaborations with public and private institutions based in Bangkok. Each observational lens brought him as design researcher to an alternative perspective regarding the host social context. Furthermore, 'Not only ideas, but emotions too, are cultural artifacts' (Clifford, 1973). [5] The host society gives new ways to perceive and experience the body and it perhaps 'influenced the manner in which emotions are felt and communicated' (Frevert, 2014: 43). [6] The paper describes how a designerly way embedded with ethnography approach aimed to comprehend the cultural gap. The fashion project started almost unconsciously as a way to collect personal memories; the visual richness of the unique local craft became then something unexpected. Once the final product was shown to the public, feedbacks went behind the expectation. A project initially modeled by nostalgic memories and search of the (countryside) hidden beauty, was translated in a different perspective. Feedbacks from Thai academics and artists suggested that the sartorial cut of the collection reshaped the way they were used to perceive traditional fabrics. Furthermore, once the collection was exhibited in Italy and US, it became an imaginarium, the exotic dream for western people who have never visited the east. A capsule collection realised with local artisans and a never-ending exploration during the long permanence in Southeast-Asia. Exhibited in Italy it became a new starting point, a platform for conversation and a tool to reframe the way to approach new cultures. This experiment was a four years project, while writing about this, the collection became the way to re-learn from it and a self-rediscover; an educational framework. It is an under development approach to design research and it could be heightened in a module for an articulate methodology to enact students (future designer) to be aware of the inner-self via somatic activities.

Materialisation of Experience

While interviewing the philosopher Richard Shusterman, the president of China Central Academy of Fine Art in Beijing Pan Gongkai compared technique and talent in Chinese culture, underlining the fact that 'the maturity and alliance between eyes, hands and hearts, could possibly elevate mere technique to the level of concepts like Dao – transcending the level of human consciousness' (Pan Gongkai 2015: 66). [7] Moreover, what 'touching' means it is to touch the untouchable. Aristotle's Peri psuchës had already insisted on this: both the tangible and the intangible are objects of touch (hë haphë tou hatou kai anaptou) (Peri psuchës 424a). In the same direction the American artist Dan Flavin remarked that artistic experience isn't the object instead but it is all around you (2016). [8] If we assume that we cannot separate our soma from our body, the outside from the inside me, it is clear that we cannot divide the perception of physical or ethereal object from the idea gathered within the experience. It is a sort of paradigm in which the materialisation of experience leads to self and collective awareness. While the fabricated experience should be timeless, it is important to underline how new design practices should concern with the 'Now'. The blend ethnography - design could perhaps became the first step to enact designer from a status of observer to active participant.

Phantasy to Fantasy

René Descartes's cogito ergo sum into cogito ergo moveo and 'I am self-aware, therefore I act', said the philospoher Thomas Hanna (as quoted by Eichberg 2009: 396). [9] In 1996 Richard Shusterman coined the term Somaesthetics, as a sum of the word soma as living, perceptive body and Greek concept of aesthetics, 'a tentative to balance the representational with the experiential realm'(2009: 9). [10] Tracing the line between the above mentioned philosophy approaches the author gained the relation between the project as expression of an artistic/academic pursuit and the personal one. While the project started as phantasy, an unconscious fantasy to collect personal recent memories it has been evolved in a quest about self-reflection into the host society. Consequently, once presented in Italy and US, the physical outcome became nigh vanished in a sort of a collective imaginarium, here, fantasy is perhaps playing a central role in this new dimension of a platform where to initiate debates. Projecting fantasies, could led to some danger but from the author point of view we should always be aware of the duality of our perceived reality, furthermore we should even underline the fact that, 'we perceive reality through a veil of unconscious fantasy' (Malcolm 1978: 76). [11]

Fashion Project as Bridge for Cultural Gaps

The practice of the Wen-Ren tradition in China is described by Shusterman as a way to nourish and enrich the intellectual thinking with the making of art (2015: 47), [12] vice versa a fashion collection molded via ethnography aimed to collide the performer - spectator roles. Started from the exploration of the self and the collection of recent memories, once finalised it became a tool to reflect a personal vision into the context. The user perhaps became performer and spectator at once. When the human being is dressed, the clothing became a tool for the oneness quest. This idea has brought the author to be extremely sensitive on how to introduce this idea to the public. A film director, an archaeologist and theatre performers were then invited without any reveal information of the project to a sneak preview. Socratic debates led them to a full-engaged conversation. In order to gain their most spontaneous reaction it was given them a luggage full of clothing part of the collection and asked them to try on everything without any (gender) specification. The findings of the project indicated that the garment led the invited team in a strong emotional state, where nostalgia, as childhood memories became a strong part of the now. On the opposite direction, once presented to western the collection became a projection of dream; furthermore a tool to discover the unseen qualities and beauty of an exotic Asian country. Perhaps the described approach to fashion could be a way to develop a sort of spiritual skin, the garment as manifesto to reframe cultural preconception, a tool to touch on the untouchable.



Figure 1. Maggio, T. 2016, Yonok Capsule Collection

Conclusion

As suggested early, the purpose of this paper is to illustrate how a designerly method blended with ethnography developed ameliorative approach to comprehend cultural gaps. According to Full Professor of Methodology of Human Science Massimo Negrotti (2001: 4), the culture where we live impose our ways of seeing. [13] As even emotions are a product of the culture where we live in, the acceptance and ability to express them could brought the learner to self-confidence and to understand the collectiveness precon-

ception. This experiment initiated by blending ethnography with a designerly approach ended up with a product (fashion collection) where the perceived value is going behind the physicality of it. The artifact could then be defined an almost spiritual device able to connect cultures by reframing the initial observer's preconceptions. It is mighty important to underline how the review of this self initiated project started as design practice brought the author of this paper to analyze the value of the body from the pre-cartesian interpretation to the perspective of Merleau-Ponty. The culture of the body has become then a path to explore the self via the study of spiritual practices and the evolution of body culture to an on-going research about alternative way of design education and somaesthetics.

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The revolving door - challenging the dichotomies of designer and researcher for an innovative furniture solution

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ABSTRACT

Much more than any theoretical considerations and metaphysical mental acrobatics, the relationship between ethnology and design is thickening due to a shift from theory to practice. If it is difficult to imagine a classical ethnographer actually building artefacts with the people that he/she is studying, that is exactly what is happening in design schools around the world. This project presented here is visionary insofar as it truly blurs the lines between design research and ideation. In a series of international workshops, the dichotomies of researcher/researched object, researcher/designer and craftsman/designer have been challenged resulting in a truly innovative furniture solution.

Keywords

ethnography, participatory design, weaving

INTRODUCTION

Beyond all the data, ethnology also has validated and rigorous methods for gaining entry, conducting interviews and analyzing emic and etic information (Harris, 2001). This is nothing new and ethnography has long been established as an integral part of Design Research, due to the realisation that only through a qualitative, in-depth look at the behavior of potential users can insightful information be gained. In the past the relationship between the disciplines ethnology and design was rather one- sided where ethnology offers designers ethnography, as its most valuable tool for observing, understanding and predicting human action. Recommended by modern firms such as IDEO and méthos, obvious to ethnologists, the designer has to be – above all - empathic. In short: the designer has to become an ethnographer in order to become a better designer. It is also true that qualitative, descriptive "ethnography" as a term has become inflationary; it leads Tim Ingold to exclaim "that's enough about ethnography" (Ingold, 2014, pg. 385). Thankfully, ethnology is changing from a purely transcriptive and categorizing art to becoming part of culture-generation itself (Koskinen, 2011). Instead of only observing and evaluating the objects coming out of a workshop, the ethnologist is now inside the workshop.

A Deeper Relationship

In recent years ethnologists have begun learning much from designers. The study of "things" has also deepened a lot and modern product design is scrutinised similarly to how a bow and arrow of an indigenous person was in the past. Indeed, it has been argued that we are more animistic than ever with our semi-emphatic internet of things. Anthropologist Alfred Gell calls the spell speaking, beeping and flashing objects have on us the "enchantment of technology." He writes that this is "the power that technical processes have of casting a spell over us so that we see the real world in an enchanted form" (Gell, 1992: 44). When the animated objects around us become interconnected- as in the phenomenon dubbed internet of things- our living rooms turn into living entities and we into modern shamans staring in disbelief. Indeed, it has become more normalised to be animistic, as the things around us are gaining "souls". Of course things have still not literally been animated but the distinction between life and death has become a little trickier. As Arthur C. Clark famously stated in his second law, it gets harder to distinguish between technology and magic, the more advanced a civilisation is. But the relationship between things and makers of things is changing on another, deeper level

as observers of people (ethologists) are helping make the things people are using. And makers of things (designers and craftsmen) are teaching the ethnologists.

Ethnographic Craft: From Theory to Practice

The participation of ethnologists might range from mentorship in the design process to actually helping in building mockups and mental prototypes. This valuable addition is highlighted here as the authors have worked on the potential of cross-cultural and interdisciplinary cooperation between design and handicraft. The team of authors is an ethologist a wood-technician and a designer and the result was truly innovative furniture as well as helpful additions to the design process in general. In this paper the design process is shown in its classic steps with a description of the participation of each player.

Design Brief

The initial question for this project was how cooperation between traditional handicraft and design can be improved? Or rather: How could it be re-established since the two disciplines used to be one and the same? Thus, in a theoretical analysis, the most important terminal ology of culture, cooperation, handicraft and design needed to be firmly established.

Empirical Study

After the theoretical considerations, qualitative ethnographic research was undertaken. The chosen craftsmanship- basket weaving was observed from the outside using quantitative and qualitative research methods. However, it soon became apparent that the research would be thoroughly intertwined with the research phase of the project. Two workshops were organised to teach design students the art of traditional basket weaving. In the first one held in Salzburg Austria Roma and Sinti from Rumania led the students from simple basket shapes to complex design objects.



Figure 1. Austrians, Roma and Turks: International workshops must be truly participatory. Source: Michael Ebner

Our multi-disciplinary team (Designer, Wood Technician and Ethnologist) worked well together. In this first phase the emphasis was obviously on the theory and methodology of the humanities. The design student in the team observed and recorded the workshop, but also participated in it and in a way reversed the "participant observation" of Bronislaw Malinowski to "observational participation". In a second workshop the same was repeated in Istanbul. This time the weaving was employed to make boat-like structures. In both workshops the Master student in this team focused on documenting the events by qualitatively interviewing the participating students and photographing the resulting objects.

Weaving as a Craft

The next step was to learn the art of weaving from two experts, one time in Bavaria and one time in Istanbul. If we continue with the analogy of the "revolving door", the designer became a disciple or student of a designer, here a craftsman of the basketry tradition. As a result, two stools were created. Interestingly the very inspiration for the stool resulted out of the lifestyle experienced in Istanbul, were much emphasis is put on conversing and less on running around. In general weaving is a craft requiring few tools. It does however require much preparation. First the branches- in this case willow- need to be prepared by soaking. This is done in order to make the branches malleable enough for production. Basically weaving is always based on tension and contra- tension. It is this principle that gives baskets the enormous strength (Jensen, 1994). Our Master student had to do with very little tools and resources and thus came up with a tool herself. She developed a tool herself, which facilitated the tight weaving for a stool. It is our belief that such innovation can only happen under very frugal conditions and only when thoroughly immersed in a craft. The spindle, which turned out to be an ideal tool for creating a tightly wound stool can be removed after the willow branches have dried. Once again, observer becomes designer and vice versa!

After the Tool has been made: Building a Stool

The winding of the branches worked well using a miniature prototype and equally well using a full- size spindle. There also the branches could be wound easily. After further investigation, we found that the procedure works equally well with other materials. We also found that the material could be wound both horizontally and vertically. In order to not lose track, a pattern was first laid down using simple yarn. After several tries a first stool was fabricated. It was not time-intensive (ca. 1 hour) and withstood first usability trials. It is important to remember that the theoretical frame of wood technology and general physics helped to generate the shape of both the stool and the tool for making it. In the entire process of constructing this woven stool, the experts were always involved and contributed by showing and doing the technique. After the completion of the stool, the packaging was designed as well. On a theoretical level, this is interesting because the so-called "target group" was once again seen as a worthy of ethnographic consideration.

Conclusion

In this project it was firmly established that there exists much potential in reuniting craftsmanship and design as well integrating different cultures. In a truly open approach a viable design process was created and thus two innovative products: A spindle to make stools and a stool itself. We hope that this project encourages both designers and craftsmen to work together and

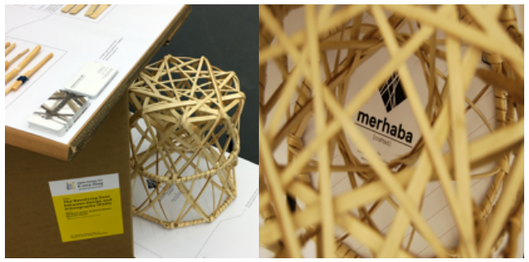


Figure 2. The finished stool withheld pressure of up to 160 kilograms and weighs only 700 grams. Source: Susanne Honsa

seek inspiration from neighboring disciplines. It is also recommended here that designers orient their projects more towards other cultures, as we found it extremely stimulating to do so. On a theoretical level this project is interesting because it shows a new design process off the beaten track. Here the designer becomes ethnographer in order to become a better designer. The project was visionary insofar as it truly blurred the lines between design research and ideation. In short, the dichotomies of researcher/researched object, researcher/designer and craftsman/designer have been challenged.

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Design ethnography and inheritance: the revitalisation of Hakka tradition in fashion collection

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ABSTRACT

This fashion collection is part of a larger design ethnographic study exploring the possibilities of extending design ethnography from "informing design" to "engaging design" through a series of community-based activities. Our paper argues that learning and inheriting cultural traditions can move beyond the "in-group only" boundary under a design ethnography setting. Through collaborating with a local social enterprise and the Hakka community in Hong Kong, this participatory research presents an innovative way to preserve traditional Chinese folk culture as well as the techniques and knowledges in design practices. The 3-day intensive workshop primarily focused on Hakka band-weaving techniques. A number of Hakka mentors were showing a group of design students the technique. In the sharing session, students had the opportunities to learn the emergent of Hakka cultures, traditions, and lifestyles in Hong Kong since the 1950s. In the final module of the workshop students are asked to re-interpret the traditional Hakka clothing and apply the band-weaving techniques to develop a new fashion collection. Our research team observed and interview participants during and after the workshop. Our findings identified three aesthetic themes, namely 'new authentic', 'urban contemporary', and 'refined elegance', in the fashion collection. In summary, this Hakka design ethnography demonstrates cultural inheritance can occur through community-based design practices. This new participatory research approach also offers an empowerment agenda for both individual (i.e. design students) and the Hakka community in the context of cultural appreciation and preservation of Hakka tradition.

Keywords

design ethnography, cultural inheritance, Hakka tradition

INTRODUCTION

While ethnography has received considerable attention in the design discipline nowadays (Wasson, 2000), there is a growing concern of how design ethnography can extend its role from "informing design" to engage more participants in community-based activities that allow the preservation and inheritance of cultural knowledges and design-related practices (Barab et al., 2004; Reason, 2004). Our research team is proposing a fashion collection as part of the outcomes of an on-going design research project on a specific Chinese folk tradition and culture – The Hakka. In contemporary Chinese society, many folk cultural groups have been assimilated to the mainstream culture and it is unusual to see them putting on their traditional costumes. However, the loss of traditional cultural knowledge and design practices has awakened many of the indigenes to preserve and inherit their cultural heritages (i.e. intangible and intangible assets) for the next generation. In this study, we present an innovative way to preserve traditional Chinese folk culture as well as the techniques and knowledges in design practices. In collaboration with a local social enterprise, we engage some Hakka community members with a group of design students in a community-based ethnographic research project to examine how learning and inheriting cultural traditions can move beyond the "in-group only" boundary.

Literature Review

Design ethnography is a discipline where applies ethnographic qualitative methods within the design context. This interpretive approach aims to offer a structured framework for an in-depth investigation of users' experiences as well as their everyday life that enables designers to identify and show empathy with the users during the design inspiration and development process. The approach is originally adopted by software engineers and developers to identify system requirements, specifications, and functionality of service system in a workplace setting (Plowman et al., 1995; Someville, 1998). Recent development of design ethnography has been extended to develop an experiential framework that allows the identification of emerging themes and raise the context awareness through involving different parties in a design research project (Crabtree and Rodden, 2002; Jones, 2008). In this connection, some begin to question to what extent the participatory process in design ethnography can engage and empower collaborative group members who come together in the pursuit of worthwhile human purposes in action, reflection, theories, and practices (Barab et al., 2004; Reason, 2004). Our Hakka project demonstrates how the inheritance of design practices offers an empowerment agenda for both individual (i.e. design students) and the Hakka community in social change (i.e. the cultural appreciation and preservation of Hakka tradition in a reflective manner).

Methodology and Project Outline

The fashion collection is a deliverable of a larger project initiated by a local social enterprise which promotes local awareness on preserving Chinese folk cultures and heritage in Hong Kong. The project was jointly partnered with a fashion institute in Hong Kong. The team recruited 25 design students to participate in a 3-day intensive workshop on Hakka band-weaving techniques and sharing of Hakka cultures, traditions, and lifestyles in 1950s. Students were asked to re-interpret the traditional Hakka clothing and applied the band-weaving techniques in producing their own fashion collection, which aimed to demonstrate their reflection, creativity and originality. The research team conducted several in-depth interviews with the Hakka mentors and the students, and the entire design and development process was documented as research logs, reflective reports on "revitalizing Hong Kong essence", photographs, and several short videos. All interviews, fashion collection, photographs, and videos were analyzed through triangulation and hermeneutic techniques.

Findings and Discussions

The project successfully raised all participants' cultural awareness toward preserving Hakka traditions, while some of them were strongly motivated to search for their Hakka origin, family history, and even paying shrines visits. Three aesthetic themes, namely "new authentic", "urban contemporary" and "refined elegance" were emerged in the fashion collection (see figure 1).



Figure 1. Three aesthetic themes emerged in the project

The first theme "new authentic" showcased the reflection among a group of students who insisted to largely preserve an 'authentic' Hakka image' in the collection. They used indigenous colors (i.e. indigo and black to show the agricultural image of Hakka tradition), Hakka embroidered band decoration, and Chinese traditional apron design. Some students even created a parent-child attire to appreciate the intimacy of traditional family bond in Hakka community since they regrettably admitted these relationships were diminishing in todays' nuclear family setting. The second theme 'urban contemporary' rejected a feminine representation of Hakka costume and created a fusion of Hakka tradition and contemporary images (e.g. sports elements, independent workwear, asymmetrical cutting, and menswear design) in their collection. They believed that the re-interpretation of Hakka tradition should signify the lifestyle of 'Hakka' people today, with an emphasis of the transformation of Hakka tradition in a contemporary discourse. The third theme 'refined elegant' is a compliment on the subtleness and humbleness of traditional Hakka women in which the design were very feminine with sophisticated and decorative western design details (i.e. full-length dress, ball gown design, uses of trimmings, sequins, and lace material and suede fabrics). The students showed empathy to the marginalisation and struggles faced by Hakka women in a traditional patriarchal system.

Conclusion

The fashion collection goes beyond a replication of Hakka tradition and design practices. The three themes exhibit the efforts of a co-creation and empowerment of design experiences in which cultural inheritance, or even transformation, of design knowledges and practices is simultaneously occurred among participants of different cultural and design backgrounds. The fashion collection showcases the potential of interweaving learning experience with cultural inheritance in creation of new fashion discourse.

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The gain line

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ABSTRACT

The Gain Line' is a moving-image art work created during the Rugby World Cup which was shown simultaneously at three UK galleries in Autumn 2015. The concept of the work is formed by analysis of the ethnography of the cultural and social groups involved. It reflects the openness and enclosure that technology and data analysis provides on a social and psychological level. Design thinking is critical in the communication of a variety of experiential visual solutions. The physical and visual design language of the rugby pitch acts as a catalyst for the way in which the work is presented. Proprioception acts as a fundamental influence on the research, conceptual approach and materializing the emotional experience of the final outcome. Potentially, the work represents an alternative way to document and debate research methodologies.

It focuses on intersections of design, research and artistic practice through a variety of observational methods, negotiated through designing different ways to express aesthetics, physicality and responses to virtual/digital technological advancement. Through employing spatial, structural, aural and editing design solutions; different perspectives can be suggested around the meaning of ethnographic events, groups, operating within and around the game of rugby, whilst also enabling new audiences to be exposed to the questions these raise historically and within contemporary society.

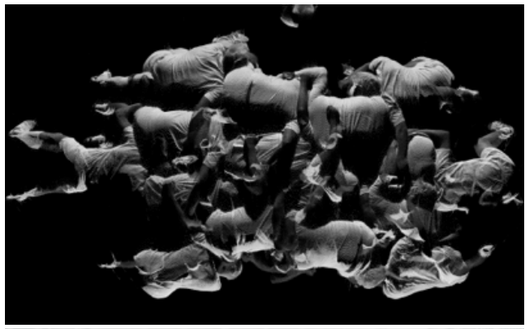
INTRODUCTION

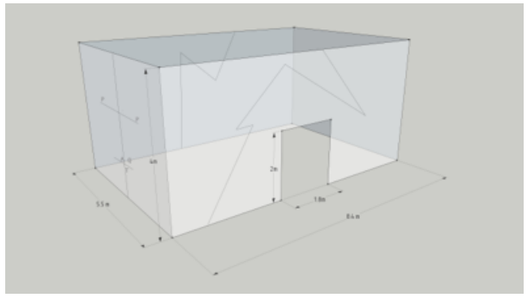
The title refers to an invisible line on the rugby field that measures teams' forward progress and their territorial advantage over their opponents. Throwing their bodies into the fray to surpass it, and putting their bodies on the line to protect it, players attach inordinate importance to getting beyond this symbolic threshold on the pitch. Beneath the high-impact challenges that take place along this notional frontline, there is another 'gain line' players and coaches aspire to reach; one that parallels the rush of competing players with a swarm of chaotic, sometimes conflicting data, captured by a new generation of sensors that players wear in training, and in matches. Although rugby is a visceral, physical sport ('no pain, no gain' its philosophical mantra) it is also one that increasingly monitors and mobilises a range of sophisticated technological data (including GPS, heart rate and other biometric readings). Combining insights gained from this new digital field including innovative use of laser and point cloud visualisation, while also transporting us back to the historical origins of the game, the work explores and raises issues on the intensity and dynamics of the sport. It evokes, through specific conceptual design approaches, some of the physical and psychological forces it sets in motion, combining immersive and objective experiences simultaneously. Here the work focuses on the evolution of our understanding of space design through technology and how greater elements of endurance and proprioception are being sought.

Utilising new technology such as mini-cams, drones mapping player movement, and groundbreaking 3D laser scanning, The Gain Line takes the viewer into the mind-set of the player, through interplay of the visual, spatial and sound design of the work within a gallery space, to challenge a contemporary audience. Deepres' work captures the intensity and dynamics of rugby while also evoking some of the physical and psychological forces it sets in motion.

Text co-written by Steven Bode (Director, Film and Video Umbrella)
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Film and Video Umbrella is supported by Arts Council England.
With thanks to Premiership Rugby, APR Services and Extreme Facilities.
Links:http://www.fvu.co.uk/projects/the-gain-line, https://vimeo.com/150526741

Keywords
sport, data, installation





Design Ethnography: opening the black box - how to draw design decisions from ethnographic observations

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ABSTRACT

Designers' concrete use of field observations has received little attention from design- thnography practitioners and scholars. How do designers make use of the data, images and impressions produced through field observation? How does the knowledge generated inspire or shape subsequent design decisions? How do designers translate field data into concepts, forms, materials and colours?

The findings of a research project conducted at the Geneva School of Art and Design (Nova et al., 2014) indicated that designers use four main 'tactics' to translate field observations into design: inversion, translation, multiplication and complexification. For instance, designers may observe the fear of an observed user and create an interface that prevents this fear from arising. Alternatively, an observed phenomenon can be repeated and enlarged or made less important. The use of these tactics at various intensities can generate new briefs, new processes and new prototypes, or trigger generative scenarios that shed new light on the whole process of design.

Workshop participants will explore the above tactics by carrying out field observations (in the conference venue or surrounding streets) and using design tools to present their results in the form of posters. The posters will be discussed to refine the participants' understanding of strategies for enriching design projects through ethnography-inspired practices. The participants will compare their real-life experiences with their preconceptions to determine whether and how the 'designerly way' is compatible with rigorous scientific field observation, and whether more 'relaxed' observation is satisfactory.

Keywords
ethnography, epistemology, research

Understanding how designers make use of field observations is one of the least commented or analysed aspects of design ethnography practices. User-Centred Design has fostered the appropriation of ethnographical tools and vocabulary for three decades, but most of the time without reliable clarification of how designers make use of the data, images, impressions that they produce during their field observation. Academic literature extensively describes different ethnography-inspired practices by designers, discusses methods, explains the potentials of non-conventional approaches, such as visual enquiry of participative co-design. But most of it remains silent when it comes to explain how the generated knowledge inspires, influences or shapes the decisions that are subsequently made during the actual design process. How does the designer translate field data into concepts, forms, materials, colours?

The workshop that we proposed was based upon the findings and reflections of a research project led by Nicolas Nova at HEAD – Genève and its related publication (NOVA N., 2014). The research project focused on designers active in interaction and interface design domain, because the IT branch was one of the first to systematically integrate ethnographers, anthropologists and sociologists in R&D departments, and also because the domain hosts a great number of very different approaches. The research focused on understanding how designers do field observation, what design tools they use in so doing, and how they translate the observation results when it comes to actually designing products, systems or services.

The research approach was practice-based, since the project itself involved field observation and the team was composed of designers (Fasel and Kilchör) and academics (Léchot and Nova) and mixed competences in graphic design, design history, design ethnography, user-centered design, critical design and design theory. The research led to identifying four "moves" or "tactics" used by designers for transforming field observations into design insights: Inversion, Translation, Multiplication and Complexification. Inversion consists in inverting an observation: a user fear is turned into an interface that is supposed to prevent this fear from happening. Translation relies on the idea that a design concept occurring in one field can be applied to another. With Multiplication moves, the point is to take a certain phenomenon and repeat it or make it less important. By Complexification, some designers add or remove steps in a process they observed. Each tactic can be used in various intensities that can generate a new understanding of the brief, a new process, a new idea, or a new prototype but they can also trigger generative metaphors or scenarios that allow the designer to undertake the whole design activity in a new light.

Workshop's Results

After having exposed the contents and scopes of our research, we engaged the 17 participants into the Workshop to form 5 groups and go outside finding interesting "design things" or "design appropriations" and observe how people actually adopt and adapt. Some groups took photographs, other sketched quick schematic rendering of situations, other simply took note of anecdotes. When coming back to the common room, the groups were asked to make 2 design proposals each (objects, service or scenario) during a quick collective ideation process. They used papers and drawing tools, post-its and sometimes the softwares provided in their computers (Power-Point or Keynote). Then each group presented its "result" and the discussion focussed on how the group developed a collective tactic to be able to make use of the data and findinds.

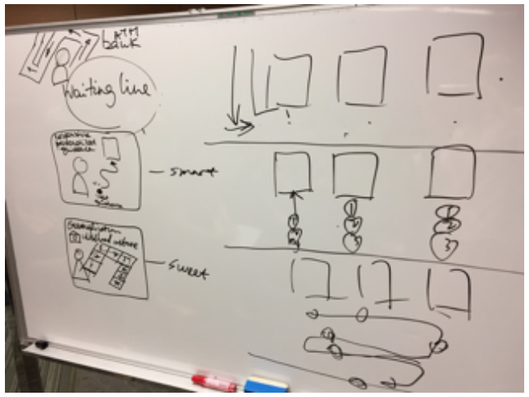


Image 1. How to enrich the time spent queuing in front of an ATM machine. Photo: Lysianne Léchot Hirt

The exploration phase was deemed exciting and fruitful by each group, including those who went out doubtful about their ability to observe anything in the premisses of the Hong Kong Design Institute campus. The variety of observations brought back to the common discussion was very rich, going from curious lines on the floor supposed to guide people when queuing in front of an ATM machine to spontaneous ways of arranging mops and buckets in order to warn passers by about a slippery floor or to the fine observation of how people develop collaborative tactics in order to prevent automatically closing doors to lock them out when leaving a room.

Participants were all trained designers, therefore ideation was quick and effective. Beyond the intrinsic qualities of some of the proposals, wittingly staged in funny scenarios or rationnaly developed in functional schemes, the most interesting part of the workshop was of course the discussions triggered. One topic came from different groups, i.e. the question of the accuracy of field observations. Of course, depending on the goal assigned to fieldwork by the client or by the designer herself, the question of how accurate or how rigourous the observation is can play different roles, including having no relevance at all. In fact most designers distrust the idea of a direct link between the level of scientific rigour of the observation and the level of design quality. The point seems to be more about the designer consciously and willingly assuming his or her position as an observer and not



Image 2. Participants proposing a scenario bsed on their field observation. Photo: Lysianne Léchot Hirt

mimicking a fantasy "universal ethnographer" position. Another discussion underlined the importance of how designers document their observations: the visual material gathered during field work is extremely precious and should be kept or made available. One participant had serious doubts about his ability to come to an interesting design proposal following the path we indicated; his group went out to observe how HKDI students use the lockers provided on the groundfloor. Observing the images taken, discussing his perception with the other group members, he came up with more abstract notions such as privacy and intimacy in the school's context and such as private space in a post-modern urban landscape and this opened up avenues of design possibilities for him. The tactic used here was Complexification, since an anecdote about how students store their backpacks lead to imagining political agora spaces triggering new forms of shared citizenship.

Confronting their experiences and finding out if and how the "designerly way" of doing field observation is satisficing for design was the aim of the Workshop. Participants brilliantly demonstrated that there is great potential in ethnographic approaches. As one designer put it: "You just have to trust the process." Because committing to observing with curiosity and empathy leads you to direct your attention to the collective creativity at stake in every corner of daily life. And this is not only an endless source of inspiration, it is also lots of fun.

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Open Design For

EXPERIMENT

The Experiment Track received around 50 submissions, out of which nine papers, one workshop and nine artefacts were finally selected. The three paper sessions confirmed the idea of experimentation as a fundamental element of both the design profession and design research but also provided a differentiation of experimentation as oriented towards different contexts, including childbirth, woodwork, cityscapes, typography and smell-scapes. The design experiment was thus opened up towards tentative play with contingent fields of forces but also discussed as a means to explore also those courses of actions that from a functional perspective might be considered erroneous, flawed, inaccurate or mistaken. The presented works also included a view on experimentation as constructive critique of current quests for innovation and growth, instead of emphasising the need for basic research through heuristic and curiosity-driven approaches, allowing for an ethos of serendipity to unfold.

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Hybrid experiment: art and science symbiosis in designing childbirth experiences

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ABSTRACT

This paper discusses the bridging and symbiosis of the methodological disparity between scientific and heuristic forms of experimentation. Experiments are creative tinkering processes practised by artists and scientists to stoke discoveries and test assumptions. In science, experimentation is often described as a rigorous conjecture-refutation process in controlled discovery. In art, it is a trial-and-error process aimed at artistic production. Science seeks “truth”; art seeks “style”. Scientists seek repeatability from a knowledge base; artists create unique solutions from myths and styles. Good science is judged on experiments that arrive at the same findings; however, good art is judged on explorations that arrive at something entirely different and new. Design epistemology adopts a more integrative role involving the symbiotic logic of science and the emotion of art. For design, an experiment in a complex system truncates, converges and optimises both art and science ontologies to interrogate wicked problems – to capture evidence, and deliver creative solutions. In evidence-based design, both empiricism and heuristics are employed, not only for their individual strengths, but rather for their combined hybrid, symbiotic and synergistic powers – in the Art-Science-Technology System. Based on a five-year case study in design research and practice involving the design of childbirth experiences, the paper defines the ethics, challenges and opportunities a designer encounters in a medical and technical multidisciplinary team in a hospital setting. Central to the discussion is the designer’s role as a change agent to democratise obstetrics through open design and innovation aimed at humanising and transforming the management of childbirth experiences.

Keywords
experiment, childbirth, art-science symbiosis

INTRODUCTION

This discussion is centred on a five-year case study in designing healthcare services and equipment to improve childbirth experiences. It is an extension of my PhD completed 20 years ago. The aim is to add an important dimension in hybrid reasoning in artistic and scientific experimentation for studying complex systems in management and care during childbirth. While I draw on the complexity of childbirth as a vehicle for discussing wicked problems, and I examine the psychological and physiological aspects of the labour and childbirth processes that affect the safety, wellbeing and experience of the mother and her baby; the emphasis of the paper, however, is on design pluralism, pragmatism, and the importance of the unification of ontologies, epistemologies, methodologies and methods that informs this pragmatic design paradigm. It will examine important insights, similarities and differences between scientific and heuristic experimentation processes performed by artists-designers and scientists-clinicians working independently and interdisciplinarily. In particular, the paper will examine the designer’s role working as an interdisciplinary team member with scientists – to showcase their disciplinary disparities, and harmonies. The need for synergy and symbiosis between opposing views of knowing and designing practised by scientists, and designers is emphasised.

In this research project, the importance of hybrid experimentation has been studied in roughly four phases of the experimental-design process:

1. Analysis: Thought experimentation (solitude thinking and im agineering) to empathise with mothers, obstetrics, midwifery and management of the childbirth system at the fuzzy front-end of the design experiment process.

2. Synthesis: Data capture, defining and developing actionable insights to inform the design of equipment, mother-caregiver postural relationship, care and management of the mother and her baby in maternity wards.

3. Evaluation: Psychophysical experimentation of the prototype Obstetric-Body Support system for desirability, feasibility viability, and meaningful emotional experience. This system consists of an Active Birth Chair for the mother to give birth in a physiologic upright posture, and a Seat-Kneeler for the caregivers to “deliver” the baby in an ergonomic position.

4. Measurement: The mother’s birthing posture, advantage of gravity, efficient bearing-down effort, pelvic cavity expansion, aorta and inferior vena cava compression, the baby’s blood-gas

scores, umbilical artery and vein pO2 and pCO2, Apgar scores and the 'time of first cry' were all quasi-experimentally measured/tested. All these clinical measurements were used to make an evidence-based decision - to accept or reject the system design created by the hybrid-experiment process, and open design symbiosis between art and science.

Artistic vs. Scientific Experiments

An experiment is a fundamental creative tool – for discovery and creativity – for both art and science. It is the creative tool to trigger thinking, creativity, and innovation. In science, experimentation is often described as a conjecture-refutation process in controlled research. In art, it is a trial-and-error process aimed at artistic production. Good science is judged on experiments that arrive at the same findings; however, on the contrary, good art is judged on explorations that arrive at something entirely different and new. Experimental processes in science follow rigorous and standardised rules, although art is free and unbound by rules. While good artists are often considered unscientific, and good scientists, inartistic, both are creative individuals who apply imagination, thinking and experimentation in their crafts (Art & Science, 2008).

Design Epistemology

Design epistemology adopts a more integrative role than art and science. Science has a positivist foundation; art has a constructivist foundation. Design as a pragmatic paradigm approaches problems and solutions with a realist foundation (Mackenzie & Knipe, 2006). Realism integrates both positivism and constructivism to transform reliable data into desirable, viable and feasible products, services or systems. For design, an experiment in a complex system truncates, converges and optimises both art and science ontologies to delineate wicked problems, to act on evidence, and provide solutions. Deductive, inductive and abductive thinking, and art and heuristics are employed, not only for their individual strengths, but rather for their combined hybrid, synergy and symbiosis powers – to deliver realistic solutions. Design experiments permeate and integrate research methods and design processes in the analysis-synthesis-evaluation continuum. Both scientists and artists apply experiments to make sense of the analysis, synthesis and evaluation phases of the design process. Brown (2009) extended, popularised and commercialised this as the empathise-define-ideate-prototype-test design continuum to be used in association with design thinking and human-centred design – a template now being used by novice designers from many disciplines.

Positivism, Realism and Constructivism

Generally speaking, the innovation process for art, science and design is an iterative, cyclical, trial and error, and conjecture-refutation procedure of testing ideas and assumptions through experimentation, evidence and experience. The challenges facing innovation in childbirth is the adoption of an evidence-based sociotechnical optimisation design approach, whereby advanced technologies are harnessed to ensure that the safety and experience of mothers and their babies during childbirth are enhanced. Rather than allowing the multidimensional process of childbirth to be subsumed and shackled in the narrow obstetrics/medical discipline, this paper challenges us to rethink, reframe and redesign the 'active' management of labour into a more physiological and natural experience journey for the mother, baby and the clinicians. A combination of factors comprising methodological plurality, ergonomics, service design, system thinking – and integrated experimentation - will be needed to provide an optimal and safe outcome.

We must embrace system complexity, with the view to transform disciplinary differences via a hybrid design approach that interacts with art, science and technology to enable innovation to take place. Sociocultural, emotional, and experiential dimensions do not bode well with modern obstetrics, nor can the religious, political and ethical complexities of childbirth be resolved by the current medical model for the care of mothers and babies in hospitals. These are some of the issues that need to be considered, along with how the designer applies creativity, empathy, visualisation, prototype and experimentation to capture empirical data and evidence to instil change, and to overcome the resistance of the structured scientific mind-set, which a designer often confronts in a multidisciplinary team.

Methodological Disparity of Designers and Scientists

Methodological and disciplinary disparities in a multidisciplinary team can be problematic if not handled with sensitivity, thoughtfulness and respect. Generally speaking, scientists are creators of knowledge, and designers are creators of products and services. However, there are similarities within the differences between the scientific methods and the heuristic methods used by the caregivers/clinicians, and the artists/designers respectively. This discussion will shed some light on the strict ethics needed in medicine and the positivist mind-set of the clinicians. This is contrasted with the constructive, pragmatic and innovative conviction the designer adopts – to harmonise professional incongruences in the multidisciplinary team.

Experienced designers are endowed with the ability to harmonise and synergise disciplinary disparities. This logic-heuristic ability enables the designer to take on the role as a change agent to significantly improve cooperation within complex systems, such as the management of labour and childbirth in hospital settings. To achieve this, the designer must adopt an empirical, participatory and evidence-based research approach, along with artistic expertise, in order to gain support and credibility with professionals who are weaned under the medical model of practice.

Childbirth as a Sociotechnical Process

Childbirth is a very complex sociotechnical process. The management and care of the mother and the baby during childbirth requires a wide range of skills and knowledge from different disciplines. Extensive medical, technological and scientific knowledge are deemed necessary to ensure that the safety and wellbeing of human life in maternity hospitals are guaranteed. A caregiver must combine technical knowhow with compassion and sensitivity for the selection of medicine and technological intervention according to individual symptoms and needs. This, in practice, is a hybrid experience, connecting a combination of art, science, knowhow and proficiency. An understanding of the sociotechnical process enables the designer to apply system thinking that exploits technology to serve human/societal physical and emotional needs.

New technology, legal values, and social changes affect normal production and manufacturing processes; in the same way, they also affect medicine in general, and obstetrics in particular, with profound uncertainty, fear and controversy. Much of this problem is centred on the invasive procedures of modern obstetrics, such as timed-labour, drugs and mechanical interference in the normal process of childbirth. In fact, obstetrics has now become one of the areas of medicine most open to public and media scrutiny. Many of these problems are knowable, designable and preventable – through open and interdisciplinary participation.

Implicit in this paper is the fact that the ways we design, in an increasingly complex technological and sociocultural environment, such as in childbirth, are becoming more challenging. In this environment, designers have to have both explicit (scientific) and tacit (designerly) knowledge to enable them to prioritise critical problems and opportunities in order to judiciously propose solutions. Designers who seek to practise in complex sociotechnical systems must possess the ability to carry out experiments for data capture, analysis, synthesis, ideation, design and evaluation of system safety, not only to answer materialistic and technical questions, but also to master interdisciplinary open-democratic design. This would enable them to transform technology into emotional and experiential meanings that contribute to make products safer, more functional, usable, and even delivering meaningful and pleasurable experiences. Designers who are knowledgeable and armed with a hybrid 'art-science', 'logic-emotion' or 'deductive-abductive methodology can contribute as scientists, designers, as well as change-agents, while playing a vital role in solving 'wicked' problems, creating value, designing and ensuring successful functionality, usability and viability of systems, products, services and other open innovations.

Three Common Forms of Reasoning in Open Design Experimentation

Designers who aspire to orchestrate transdisciplinary teams must be insightful into different forms of thinking and knowing. The conception, incubation, labour and the birth of a baby is a complex human science that effects the emotion and experience of not only the mother and her baby, and the caregivers, but also the family and society at large. Experiments enable the research-designer to draw inferences and conclusions on the best way a system affecting human experience should be designed. Reliable system efficiency is achieved through three different ways of experimenting, reasoning and designing. These are deductive reasoning, inductive reasoning and abductive reasoning. When a decision is made on what an experiment is set out to achieve, deduction will arrive at a conclusion that the experiment outcome is "guaranteed true"; induction will arrive at a conclusion that the experiment outcome is "probably true"; abduction will only provide a "best guess" conclusion (Bradford, 2015; Chong, 2006). In a hybrid experiment – involving art, science and technology (such as in childbirth) – all three reasoning strategies, abduction, induction and deduction are used not only to solve the complex problems on hand, but more importantly to ensure that innovation is guided by hard data, experimental discovery, and heuristic exploration.

Participative Open Design

The deployment of the abductive-inductive-deductive continuum will normally involve collaboration with different stakeholders, comprising designers, scientists, engineers, users and other participants. This necessitates a good understanding and application of open design philosophy, and involving teamwork from multiple disciplines that encourage co-design, and participative open innovation. More often than not, users, audiences, customers, and other "citizens" are involved. This can take place in a multidisciplinary, interdisciplinary or transdisciplinary level for scientific, pragmatic and heuristic experimentations. (Parchoma & Keefer, 2016).

It is important to know that multidisciplinarity draws on knowledge and practice from different disciplines, but each discipline stays within its own field or boundaries. Interdisciplinarity analyses, synthesises and harmonises links between disciplines into a co-ordinated and cohesive whole. Transdisciplinarity – or hybrid-disciplinarity – integrates natural, social and health sciences in a humanities context, and transcends their traditional boundaries, making it the most potent research instrument for solving complex problems involving human-equipment-environment systems – experienced in the care and management of childbirth Transdisciplinarity is synergistic, and is akin to hybridisation, because of its inclusion of methodological plurality, and respect of interaction between research and practice. It acknowledges both art and science (intuition and rigour), for a participative and open design orientation in hybrid experimentation. There is a democratic principle which is marked by a "reciprocal interdependence among contributors in a collaborative effort to understand a complex problem that result in each represented discipline affecting and becoming reoriented by others" (Choi & Pak, 2006).

The Nature of Obstetrics

"Obstetrics is the term used to describe the elements of obstetric care needed for the management of normal and complicated pregnancy, delivery and the postpartum period of childbirth" (WHO, 2016). Thirty years ago, WHO (1985) asserted that the "active management of labour" is now the new norm for childbirth. After 40 years of manipulation and experimentation with technologies, drugs and artificial procedures to alter labour and birth, most mothers, midwives and obstetricians no longer know what natural birth really is. This is a serious problem, because the intervention of modern obstetrics that the world has "relied on for so many years doesn't actually work" (Hull, 2016). The current care and management of childbirth "has increased risks for healthy women and their babies" (Lothian, 2009). Again, according to WHO (2016), childbirth in hospitals worldwide are often "abusive" and "disrespectful" to human rights issues that are threatening to life, health, bodily integrity, and freedom from discrimination. These criticisms in the management of labour and birth are extremely worrying and serious. They are caused by the narrow focus of scientific management of the obstetric ontological and epistemological tradition - that has always excluded participation, codesign and transdisciplinary experimentation. Waldenstorm et al. (1996) maintained that childbirth is a multidimensional experience. They

stress the importance of approaching childbirth from different perspectives, and call for a more holistic approach that takes into account both the physical and the psychological factors in the management of childbirth.

Importance of Ergonomic Position for Childbirth

Gaining an in-depth theoretical knowledge of factors that affect the outcome of childbirth experience is of vital importance. The importance of postural positions for work and childbirth has been critically studied since the 1940s. Valuable inferences can be gleaned from these studies to inform the design and development of a posture-enhancing system for childbirth. The body position or posture is an important criterion for all biomechanical functions and the design of equipment, workspaces and work procedures. It affects the worker's ability to use equipment, reach, hold, push or pull, and it influences the length of time an activity can be performed without adverse health effects such as fatigue and cumulative disorders and disease. Where an activity or posture is assumed to satisfy only the technical requirements, engineering criteria or other constraints, functional inefficiency, fatigue and disease may arise. In order to improve the situation, criteria for designing work activities (childbirth is hard work!) and the resulting posture must be based on the body's requirements as a living organism (Corlett, 1983). In this context, the relationship between postures, physiology and biomechanics promises tremendous scope in experimentation for the study, analysis and equipment design for childbirth. Labour and childbirth is a physiological process. Its efficiency is dependent on good postures, and how the equipment is designed to encourage and support the mother in the most optimum position.

Akin to working postures, the position adopted by the mother during labour is considered to be the most important factor for the safe passage of the foetus through the birth canal. There is biblical and historical evidence that the natural posture adopted by woman during childbirth has always been in some form of the upright position – sitting, squatting, kneeling and standing. The supine position for delivery, adopted in modern hospitals, facilitates the management of labour, but it has no established benefit for the maternal mother and the foetus. Many physiological disadvantages that adversely affect maternal well-being and foetal oxygenation are associated with the supine position. (Andrews & Chrzanowski, 1990; Liu, 1988; Lugina et al., 2004).

Some postural aspects of childbirth have also been investigated as far back as the 1980s. For example, Jordan (1980) investigated the birthing postures in relationship to the anthropological aspects of four different cultures, and Engelmann (1982) studied extensively the birthing postures of primitive people around the world. The physiological aspects of a variety of birth positions have also been studied by a large number of obstetricians and clinicians. These investigations have been predominantly concerned with the efficiency of labour, drug requirements, and loss of maternal blood. They were mainly medical and clinical studies (Atwood, 1976; Balaskas & Balaskas, 1985; Caldeyro-Barcia, 1979; Dunn, 1976; Gupta & Lilford, 1987; Howard, 1958; Liu, 1988; Odent, 1985; Young, 1983).

Collectively, the problems surrounding childbirth have been extensively investigated by a multitude of disciplines over many hundreds of years. However, no other studies have been found in the literature that examines the subject in a truly integrated, hybrid or transdisciplinary approach. There were also no studies found which addressed childbirth in a symbiotic design approach involving art, science and technology. Furthermore, in nearly all of the studies, no evidence has been found where the functionality, usability and desirability of the equipment-environmental factors were considered to be important for the wellbeing of the mother, baby, midwife, obstetrician and clinician.

Adverse Effects of the Supine Position in Childbirth

The upright position was used in antiquity, through the Middle Ages, and until the mid-18th century when Francois Mauriceau, who was the obstetrician to the Queen of France, replaced the sitting position on the birth stool to the recumbent position in bed to facilitate the management of labour, examinations and the use of the Chamberlen forceps (Caldeyro-Barcia, 1979; Howard, 1958). The recumbent position continued as the posture for labour and delivery during the 19th and early 20th centuries when most births were taking place at home. By 1979, around 95% of all women in developed countries had hospital deliveries. As hospital births increased, the delivery table replaced the bed, and the woman lay on her back in the lithotomy position.

Throughout the past 80 years, in the study and investigation of the well-being of the mother and her baby, the horizontal position - recumbent, supine or lithotomy - has been regarded to be unnatural and unphysiologic for labour and childbirth (Andrews & Chrzanowski, 1990; Bond, 1973; Caldeyro-Barcia, 1979; Dunn, 1976; Howard, 1958; Liu, 1988; Lugina et al., 2004; Russell, 1969). Gupta and Lilford (1987) and Scott and Kerr (1963) asserted that in the supine position, the weight of the gravid uterus on the blood vessels diminishes uterine perfusion and they called for the avoidance of the supine position to prevent supine hypertension.

Howard (1958) started a return to the upright physiologic position in 1954. He delivered 219 babies in a modified sitting position, and reported that the upright position – either a sitting or squatting position – is practical, satisfactory from the mother's viewpoint, and should result in less intracranial damage to the child than has been encountered by the use of the various supine positions.

Pavlik (1988) asserted that there is now unequivocal evidence that the supine position for labour and birth has many disadvantages which can lead to problems including: a narrowing of the birth canal; compression of major blood vessels of the mother such as the aorta, inferior vena cava, and iliac arteries; loss of pelvic mobility; loss of the benefit of gravity; and diminished efficiency of contraction.

Biomechanical Advantages of the Upright Position

Mengert and Murphy (1933) carried out experiments on non-pregnant women and showed that intra-vaginal pressures, when bearing-down, decrease as the body approaches the supine position. Thus a woman in the sitting position is 30% more effective in bearing down than when she is in the horizontal, lateral or supine position.

Howard (1958), who applied the principles of physics, and Newton's law of gravity on Mengert and Murphy's data, calculated that only 65% of the force needed for delivery in the horizontal position would be required in the sitting position. Further, Thomson (1988) reported an exploratory study that 30 minutes of pushing in the upright position is equal to 60 minutes of pushing in the horizontal position.

In the horizontal position, even the use of the forceps is faced with major mechanical and gravitational disadvantages. Howard (1958) reported an experiment where a spring-scale was used to measure the forces required for deliveries with Tucker McLean forceps. It was found that the average pull to extract the foetus' head was 35 pounds (15.9 kilograms), and the greatest was 74.8 pounds (35.7 kilograms). The direction of pull in general is in the horizontal and the baby's weight being vertical. The drawing below illustrates the problem, using Pythagorean formula.

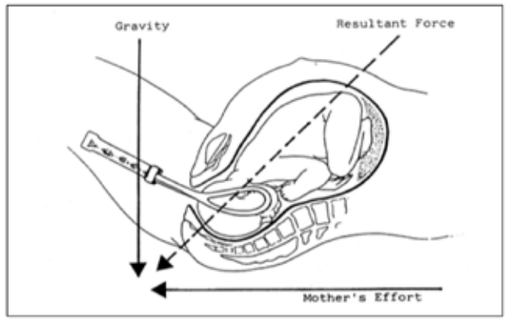


Figure 1. Mechanical disadvantage of the horizontal position for childbirth and the use of forceps.

It has been demonstrated that if the mother is upright, only 80% of the force needed in the horizontal position is required to deliver the baby.

The average pull exerted in the upright posture is 28 pounds (12.7 kilograms), compared to 35 pounds (15.9 kilograms) for the horizontal position.

The drawing above shows the resultant forces created by the maternal and gravitational forces. If the mother is lying on her back during childbirth, she is pushing her baby out at right angles to the gravitational force, resulting in a greater incidence of maternal tissue tearing, as the resultant force is directed at the perineum rather than the vagina sections. Considerably more effort is required as the mother attempts to push the baby uphill, against gravity (Dunn, 1976; Inch, 1985).



Figure 2. Postural Experiments with a childbearing woman to establish a reverse mother and obstetrician postural relationship. In this new relationship, the caregiver sits below the birthing mother to enable the mother to maintain optimum physiologic posture that is assisted by gravity. It enables the caregiver to see and work in an ergonomic position.

Design Outcomes

Psychophysical Experiments

Psychophysical experiments, or the subjective estimate methods, with both absolute and relative judgments, were used for the evaluations. The questionnaires were structured to evaluate predetermined areas of interest. All questions were constructed on seven-point "graphic rating scales". This was chosen to enable the accurate evaluation of fine psychophysical discrimination of sensations that were deemed important in labour and childbirth. From an administration perspective, graphic rating scales were also chosen because they are more interesting for the participants, simple to fill in, and do not require the participant to bother with numbers (Gescheider, 1997; Pelli & Farell, 2010).

The Obstetric Body-Support System, comprising a "birth chair" and a caregiver's "seat-kneeler", were designed and quasi-experimentally tested in a comprehensive process, involving 19 participants from 6 different user-groups over a five-year period. Three user-groups comprised 4 independent midwives, 7 midwives from the Wellington Maternity Hospital and 3 expectant mothers in the Prenatal Evaluation. A consultant obstetrician, 2 midwives from the Kenepuru Maternity Hospital, and 2 postnatal mothers tested the system in the Postnatal Evaluation.

Four different sets of questionnaires were used for the experiment: two sets for testing the whole system, and two sets for testing the birth chair. The system questionnaires were used by birth attendances, one set for the prenatal test and another set for the postnatal test. The birth chair questionnaires were used by all participating mothers, one set used by prenatal mothers and another used by postnatal mothers. The system questionnaires, "Obstetric Body-Support System Evaluation" questionnaires, were designed to gather information on the function, usability and design features of the entire system for the delivery of a baby. The "Active Birth Chair Questionnaires" were designed to gather information on the ergonomics, perceptions, feelings and opinions of the mothers on the use of the Active Birth Chair for labour and childbirth.

Experimental Results

The results of the psychophysical experiments to test the final outcomes of the system showed that mothers and caregivers have received the Active Birth Chair, the Seat-Kneeler, and the entire system with a high level of acceptance as a new option for childbirth. Besides providing ergonomic support for the mother, the system had been found to contribute to the psychological and physical well-being of the maternal mother by making her birthing experience more “active”, “comfortable”, “easy to push”’ and “satisfying”. These are elements for a “Good Holistic Birth Experience” – which the current study has set out to provide. One woman, after a prolonged labour on the bed, “was saved from intervention with forceps” with a “good birth” on the Active Birth Chair. This statement, from the obstetrician who delivered the first baby on the System, is an important substantiation that supports the research hypothesis that the upright birth position, which takes advantage of gravity and the more effective biomechanical bearing-down power of the mother, is more natural and physiologic for childbirth. Of the 15 design features in the Active Birth Chair, and nine design features in the Seat-Kneeler that were tested, no major hazards that might disadvantage the birth process, or endanger mother and baby had been found. Only the seat angle of the Active Birth Chair was considered to be too great and required modification by some mothers and caregivers.

The experiments also showed that childbirth equipment, systems and practices to be beneficial to both mother and her baby. They promote optimum mother and foetal well-being, especially in clinical management that assists foetal descent, foetal oxygenation, takes advantage of gravity, biomechanically more efficient bearing-down, assists pelvic cavity expansion, minimises foetal injuries if forceps are used, prevents compression of the aorta and inferior vena cava, improves blood-gas scores, promotes umbilical artery and vein pO2, lowers pCO2, improves Apgar scores and time of ‘first cry’, etc. These factors form the key design criteria that can only be achieved through a hybrid, interdisciplinary and open design participation between art and science.

The key to this success is based on the following five areas. First, the use of a hybrid experience analysis; design and evaluation enabled the researcher-designer to apply an empirical approach to evidence-based design. Critical analysis of the medical model had informed the design and evaluation of a system that improved childbirth and the management of labour, by allowing the mother to labour in the upright posture, and reversing the delivery position of the caregivers from looking down at the mother’s abdomen, to looking up at her perineum. In the upright posture, and assisted by gravity, the descent of the baby from the birth canal is natural, physiologic and more efficient. The new forward-facing position of the birth attendants enabled them to have better hand-eye coordination to deliver the baby more efficiently. Midwives and obstetricians are now able to see the baby being born in a more ergonomic position.

Second, in this open design, mothers, midwives, obstetricians and management of the health boards were fully involved in all stages of the research, design and development, and experimentation and evaluation process. Participants in the transdisciplinary approach provided the researcher-designer with the insight of childbirth, and all participants were active in the appraisal, decision-making and testing of the design concept, mock-ups and prototypes.



Figure 3 & 4. Psychophysical Experiment of Obstetric Body-Support System by childbearing mother and midwives at Wellington Hospital (left), and briefing labour ward supervisor just before trial at Kenepuru Maternity Hospital in Wellington (right).

Third, the judicious application of scientific and heuristic experimentation that is guided by evidence-based practice, together with hybrid system design thinking in art and science, has produced a system that is beneficial to mother and baby. The system is functional, reliable, safe and delightful to use.

The fourth factor in the success of this project is the increasing number of well-informed mothers, midwives and obstetricians who were cognizant of the concept of upright physiologic childbirth, and were committed to collaborate with the researcher-designer.

Fifth, the use of hybrid thinking ensured the smooth flow of scientific theory into evidence-based design practice. This reduces disciplinary barriers often encountered in system design, experimentation and evaluation when science and design are used as separate disciplines. However, I like to warn the reader that despite the success of the experiment, the number of participants used in the evaluations is considered too small for firm conclusions to be drawn from the results. Further positive test results are needed before the system could be put into general use.

Conclusions

Childbirth is a complex sociotechnical process. This case study has shown that its improvement has necessitated an integrated approach in research and design from art, science and technology. The paper has discussed the bridging and symbiosis of the methodological disparity between scientific and heuristic forms of experimentation to capture insights to inform the design and evaluation of an obstetric body-support system. For design, the purpose of experiment in a complex system is the harmonisation of the user-centric human-equipment-environment system. Symbiosis in an open and democratic process is predicated by participation and collaboration. In this inclusive research and design process, the observer-researcher-designer is in intimate relationship with the system. Thus, in this integrated hybrid experiment, the researcher is interested in developing a holistic view of the observe-describe-world relationship. The observer-researcher senses and describes what s/he sees, hears, feels and smells in the experiments. S/he empathises with human needs and system requirements effectively through a cyclical and iterative process involving science and art - (logic and emotion, and intellect and heuristics) - to bridge disciplinary differences via hybrid reasoning, knowing and designing. Gabbay and Woods (2005), discussing the thinking of Popper, Kuhn and Lakatos, argued that good design must experience a “family of theories” in a “research programme”, rather than merely “testing narrowly and strictly” one individual theory commonly practised in scientific experiments. Hybrid experimentation considers multiple theories to inform praxis, which a conventional, scientific experiment does not require. Science errs on narrowness for the sake of scientific rigour, reliability and repeatability. Heuristics plays a key role in open design experimentation: it facilitates creativity. Hybridisation and symbiosis of art-design-science experimentations ensure successful outcomes in transdisciplinary knowing and problem solving. “Without heuristics, science is nothing, but the poverty of its imagination” (Source unknown)! Conversely, heuristics is nothing without science, but destitute of its innovation. Originality flourishes at the intersection, symbiosis and synergy between Art and Science in the open and inclusive hybrid process.

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It’s not an experiment if you know it will work

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ABSTRACT

For the last decade we have been challenging and experimenting with wood – constructively, structurally and materially. Under the theme‘It’s not an experiment if you know it will work’, structures have been planned, built and tested. All of the constructions have gone far beyond what calculations and engineering predicted. Projects falling down, sinking, walking and standing have given us a strong platform from which to get to know this fantastic material. Our last project, ‘Wood You’, was a tensegrity construction. This structure had three elements standing on the ground. From the top of and in between these standing elements another three new elements were assembled, hanging from wires, to reach a new level. From these three elements, we repeated the operation, assembling three more hanging elements. In this way, the structure grew.

The project was a big experiment. First making sketches and then testing out principles using scaled models. From there, we went directly to working in 1:1 scale. Engineers with 3D calculation programmes ‘tried to follow’. This was a struggle (or more of a battle) between tensional and compressive forces. With three elements standing and 12 elements hanging, it is difficult to describe what kind of a construction this was. We reached a height of 26 metres and that was far more than the results of the calculations of the material dimensions we used.

Keywords
experimental, unexpected, learning-by-doing

There is really only one way to learn how to do something and that is to do it. If you want to learn to ride a bike, go skiing, drive a car, milk a cow, light a fire, design a building or be part of a team, you must have a go at doing it. In our profession, in the field of design, there are also things that cannot be challenged or surveyed without actually doing them. You cannot explain music without ever hearing it and you cannot explain light without seeing it. You can explain something, but the sensuous knowledge has to be experienced – just like the atmosphere in a room, the warmth from the fireplace, the tactility of a material and the softness of a textile. You can read about these things or see them on a screen, but that is not the same as experiencing them.

We have moved from the ‘Mechanical Age’ to the ‘Electronic Age’. More and more is being developed on computer screens, and the computer has become our most important tool. This results in development and ‘facts’ that are far removed from reality –as regards atmosphere, experience and knowledge. This paper will present some examples of how to get to know a material. The material is wood. The way to get to know the material is to work with it physically in full scale. Not on a screen.

The Method

Learning by doing

The inquiring activity invited by theinvolved in an experimental process results in an operation that is not linear, but ends with whatever has been tested out and the results of it. It is direct. In a way, it is a case of: ‘to be or not to be’. The projects and the process are a playful quest and a test of the properties of the material. If what we build collapses, then we have to try something different and test new ideas and possibilities. And if we succeed, then we just have to continue – higher and higher, longer and longer. Play results in experiences, experiences result in understanding, and understanding results in knowledge. To put it simply, this is experience-based knowledge. Learning by doing.

Playing

When we use the word ‘play’ here, we mean it quite deliberately and seriously. The word gives a completely different type of freedom when conducting research than the scientific and rational approach. Play also has an element of inclusivity, as well as its exploratory aspect. A playful situation inspires us to work together and motivate each other. Play has an inherent power and an element of display, allowing us to feel that we are all pulling together as a team. By emphasising the concept of play so strongly, we are inviting people to participate in a process that is inclusive and challenging, and it enables us to work together to push boundaries further. Play gives us space that is unpredictable, where unexpected things can happen. Some people may feel that the concept of play is not serious, but the ‘inherent playfulness’ of the process means that things happen that no one could have planned or decided beforehand. Recent research describes this as the space where development is created. Play is also without obligations. When we invite people to take part in these processes, we want them to take responsibility openly and willingly, and to develop a shared ownership of the object that we are developing. As a research method, this shifts the focus onto the boundaries that we want to push or cross. In this experimental play, there are two factors in particular that stand out: curiosity and the ephemeral.

Curiosity

It may seem obvious that curiosity is an essential factor. It is nonetheless important to point out that it is essential for us to be aware of this quality, so that we can nurture it. In creative processes, curiosity is by far the biggest and most important resource that we have. Imagine that – and it is free as well.

The Ephemeral

The ephemeral provides freedom. You plan, test and build. In these types of projects, we want to stretch ourselves as far as possible. Sometimes we take this too far, but that is the point at which we might have our most useful experiences. And no matter what happens, the ephemeral was not meant to last. Or, to be more precise, it was not meant to last as a physical object. The ephemeral is completely non-binding in terms of duration. Without this freedom, we would not be able to push the boundaries to their limits. That is where the experience lies. In some projects, we have pushed things too far, although they are not shown here. We have to admit it. But it adds an extra dimension when a project stands there and we can proudly show it off. And it will have to come down in a short while. That is the concept, because otherwise the experiments could easily become more static in their approach. In our day and age, the ephemeral may seem a little irresponsible in terms of the resources and manpower used. From our point of view, we know that, in the time we have spent playing and building, the forest has regrown the volume of timber that we have used, many times over.



Image 1. Curiosity …. and playing

The Experiments

Challenging Wood as a Material

How strong is wood really? We started our series with experiments that tested the strength of wood in relation to the shape of the structure in which it was used. We mounted a knotless wooden beam between two supports. It was 5 cm wide and 10 cm high. It was top-quality T24, had no safety factor and was laterally supported. The weight load was 500 kg, or the equivalent of six adult males sitting side by side. According to our calculations, a span with a length of more than 4.0 metres would break, and this one did – sending six men tumbling to the ground. This experiment is based on current standardised building methods and potential approaches. A beam is laid on two stable structures that could be walls or columns. In the series of experimental wooden structures, we also try out other constructive and structural ways of investigating wood. The first attempt that we wanted to make was to challenge the strength of the wood by testing a different combination of form and material with the same construction height of 10 cm. Could we increase the length of the span? Since this was artistic research, we wanted to experiment with the relationship between material and form.



Image 2. Testing wood

The Dome – How Far Can We Go?

After considering a range of construction principles, we chose a lattice dome structure. A lattice dome has some of the same properties as an egg. The experiment with the Dome is therefore not a new development as such, but primarily a continuation, inspired by the joy of achieving strength through the right combination of material and form. The interplay between material dimensions, joints, form and span makes the structure extremely effective in terms of the material. The same construction height as we had previously tested was placed in a different context. The wood, with a construction height of 5 x 10 cm, was split into two lengths of 5 x 5 cm, and the laths were laid in a criss-cross pattern. The result was a lattice of laths in a quadratic system. The principle was to build this latticework horizontally like a carpet on the ground, and then lift it up around the central point until it formed a rough hemisphere.

Then the question was: how far would it be possible to extend the structure's span. Based on our knowledge of the elasticity of wood, we tested out different static principles and calculation models, which all indicated a maximum span of 15–17 metres and an arch height of a maximum of 3 metres. We would be able to measure the elasticity of the wood by flexing a lath upwards and testing its pliability. Calculating the maximum structural length was more challenging. The solution was a combination of our technical understanding of the material and our willingness to work intuitively and achieve the impossible. We multiplied the results of the calculations by one and a half – from 15 metres to 22.5 metres. In other words, we increased our starting point, which was a structural length of 4.5 metres, fivefold. Our biggest uncertainty, after having pushed the structure so much further than the calculations, lay in whether the entire shell structure would become unstable and behave like a lump of jelly.

The laths have a standard length of about 5 metres. These were connected using two thin steel fasteners and screws to form a continuous length of over 22.5 metres. Holes were drilled in the lengths at 50 cm intervals, and they were laid in a grid pattern with an axial dimension of 50 cm. The intersections were connected with bolts that went through both sections, and fastened with washers and nuts.

We worked systematically. We put 2.6 km of timber into the system. We fitted 2,040 bolts with nuts and washers to the intersections. There were 132 lath joints, each with two fasteners, and the outer ring of the structure was screwed together with 3,500 screws. The lattice spanned a surface area of 380 square metres. Lying on the ground, the structure consisted of 1,520 squares. This area was then lifted up and the surface took on a new geometric form. The squares in the central cross of the structure retained their square shape, while all the others turned into parallelograms and formed the shell shape. We had specified the height that we wanted the dome to be, and used this as the basis for planning the outer edge, so that the shell would meet the ground as a continuous ring when it was lifted up. It took 18 enthusiastic lattice builders, 15 students and three specialists who worked for three days, to assemble the lattice on the ground. Then everything was ready for the big lift.

A mobile crane arrived. Four straps were attached to the ribs at what we believed was a suitable distance from the centre point. The crane slowly began to lift. A little higher and then a little more. There were creaking and cracking noises. In the middle, the dome lifted up, but the outer surfaces did not follow. It appeared that the outer part of the surface was too big and heavy, despite the fact that we had fastened the straps a good distance from the centre. Lifting it higher did not help. The attempt had failed, and the result was 'the biggest fried egg in the world'. Had we gone too far in the span, with the result that the forces did not act together? The structure was lowered back down to the ground, and we planned a new attempt.

In our next attempt, we fastened the straps further out from the centre, but our experience from the first lift indicated that this time, the central part would probably not follow. We started lifting carefully, and sure enough – the structure took on the shape of a doughnut. Four people crawled into the structure with stakes, readied themselves and lifted the central part in parallel with the crane. Now our sectional arch had become strong enough to hold up the central part, and, gradually, we lifted the entire structure. We stopped at 6.5 metres. Some of the laths broke and began to give way. We secured a rope around the base in order to prevent the sides from sliding back out. We loosened the lifting straps, and the Globe was left standing there, with a height of 6.5 metres and a maximum span of 22.5 metres.

All the bolts were loose while the lattice was being lifted, which meant that the surface could be manoeuvred. The optimal sectional surface would have been a parabola shape, which has less of a horizontal surface at the top than a hemisphere and distributes the forces vertically and to ground level more quickly when it is under load. The structure was pulled up round the centre point, and had a skirt at the outer edge that we had to lift a little in order to distribute the forces optimally. After the dome had obtained its shape, we tightened the bolts in the outermost five meters. This was two-thirds of all the bolts. The edge ring consisted of two planks that were joined by screws. As extra security for the structure, the ring was reinforced with yet another plank. The end pieces of the lattice where it met the edge ring were fixed mechanically with screws. The strength of the structure had to be tested. Fourteen people climbed up onto the structure. It held, which meant that the safety lines could be removed. We had not only increased the span length, but also the load capacity.

Internally, the dome formed a spectacular vault – a microcosm with longitudes and latitudes. Now we wanted to invite people into it. In order to keep the tight geometry clear and visible, we lifted



the entrance opening up off the ground a little, so that the circle around the base remained continuous. We created the entrance by removing 2 x 5 squares from the lattice and created an aesthetic supplement to the dome – a vertical feature that would also be part of the main composition.

Based on this impression of a microcosm, with longitudes and latitudes, we invited all the foreign organisations and minority groups in the city to an informal gathering. The Dome became a party venue. We used 36 torches to mark the circular shape and light up the structure from below. The living light clearly delineated the area and created a 'magical' impression. The tower, i.e. the vertical form of the structure, was also lit from below. During the course of the event, the character of this element would change and create different moods. A long table was laid out with simple food, fruit and drinks, and, together with the entrance, the tower and cloud/screen, it formed a composition under the fantastic vault of the dome. The dome was ready for the party, and the musicians began to get their instruments out.

Everything was on schedule for the opening at 19.30. More than a hundred expectant guests were waiting outside – while inside about 20 people were busy making the final preparations. Then, at 19.27, disaster struck. We heard a crack, and suddenly the dome began to sag. Not all that quickly – but it did sag. It fell down!

So what had gone wrong? Now we have the experience. With the Dome in place, we had constructed something that, theoretically, should not have been possible, namely a wooden structure with a construction height of 5 + 5 cm, most of which spanned 22.5 metres – five times longer than a four-metre straight beam. First we achieved the impossible, and then the unforeseen happened.

Tower of Rods – Testing Out Future Constructors

Chaos is all around us – local chaos, global chaos, financial chaos, traffic chaos etc. The principle of chaos has inspired a new quest in the art of engineering. What qualities does the chaos principle have – other than a purely visual expression? How could we create limits and facilitate a dynamic, organic and chaotic development project? The question of selforganising structures has interested and fascinated many engineers and architects in the 20th century. So far, there have not been many practical applications, but the question is whether we, in our digital age, now have new opportunities to define, calculate, assess, produce and thereby use this principle constructively.

This method of building and growing can be found in nature, for example in magpies' nests, termite mounds, coral reefs etc. This combination of a random and logical method of building made us want to challenge young constructors who could be expected to take such an approach and who had not learned other construction principles. We handed it over to a generation who could look freely at the situation, i.e. 9 to 13-year-olds, who we assume are both free-thinking and chaotic. The children were challenged as designers and builders. They would be working with a material that they knew could break and cause chaos. And we wanted to give the structure a height that could also create chaotic reactions.

In our invitation to schools, we wrote: 'We challenge young design talents aged between nine and thirteen to join us and build a huge model out of thin wooden rods. We will see how high we can get in two days. This spatial construction, which will be in the form of a tower, will be built of thin wooden rods (about as thick as spaghetti), which will be joined together using glue guns. We have ordered piles of wooden rods and several kilos of glue – all we need now are builders! The tower's basic design will have three legs that will act as a portal – an opening – through which people will be able to walk. The opening will be about one metre wide and three metres high. The tower's legs will come together above the opening and continue upwards. The plan is to build a tower or a structure at least nine metres high, and we challenge everyone to join us and help to create this visual expression.'

We cut 2,500 metres of spaghetti-thin wooden rods, and hired an arsenal of glue guns. A wonderfully chaotic structure extended skywards. The principle was to build the top first. The uppermost unit, topped with a spire and flag, had a height of just over one metre, more precisely 1.20 metres, plus the flag. This was to ensure that the tower would be over nine metres, if we succeeded in making eight layers of metre-high modules underneath this. The base edges of the top unit had to fit onto the top edges of the next unit, which had side edges of one metre, and, in turn, the base edges of this unit had to fit onto the top edges of the next unit. This would enable us to erect the tower gradually, by lifting up the units and inserting a new unit underneath. The edges were defined, while the chaos structure that gave the tower its constructive strength was built by enthusiastic schoolchildren. They got to decide what the tower would look like and how it would be built (with a little guidance at times). In this way, the top was gradually

lifted higher and higher as chaotically constructed modules were added from below. We were in full control of the lifting operation, as we knew that the total weight of the rods was only about 17 kg. The structure's low weight also gave rise to some special design requirements in terms of wind load.



Image 3. The Future Constructors

The Tower of Rods does not belong to classical Euclidean geometry. Quite the reverse, it belongs to a chaotic type of system, such as those used by ants to build big anthills. This was done through a combination of processes determined by genetics and by external natural forces. An anthill is essentially built from the same units that are repeated over and over. For our specific project, it was 4 x 4 mm quadratic rods that were put together in a combination of chance and logical necessity. The children constructed and reinforced the structure where they saw vulnerability – 'the chaotic motor'. In this way, the result became completely different from engineers' triangulated vectorial structures, even though they are both made up purely of vectorial elements.

We had demonstrated that our experiment was feasible on a small scale. The question was whether it would also be feasible on a larger scale, using an intelligent system. Would the result then be illogical? Would we choose to ignore many of the geometric systems used by nature? Just think about the internal structure of a pine cone, which is a jumble of rod-like elements that stiffen each other. We can see a similarity here with engineers' spatial scaffold structures, but it has much more in common with the children's chaotic systems.

The tower was built from below and upwards, using modules that were attached to each other from underneath. What may seem like a childish game on the surface in fact suggests a new direction that can be adopted by both architects and engineers. Where is the balance between the chaotic and the classic – and what forms can it lead to? The Tower of Rods is a basic study of form – and in no way a finished result.

The construction site for the Tower of Rods was a wonderful sight. There were children everywhere – standing, sitting and lying. Everyone was holding wooden rods and working in groups around shared glue guns. Construction was in progress. They were going to build a tower that was as tall as the buildings around the site. Rods were glued in place wherever they were needed. The children could see immediately where rods were missing or where there were weak points. If one rod was not long enough to cover a span, it had to be joined to another, or two or three, so that it could bridge the gap and be inserted. The strength of the design and construction was under constant assessment, as the children pushed and pulled at it. There were discussions about strength and durability until the children concluded that something was now strong enough. All of the nine to thirteen-year-old pupils had learnt the principles of load bearing and the importance of diagonal stays. Chaos was transformed into beautiful order.

But would the Tower of Rods hold? After all, nine metres is quite high, and the spaghetti rods were only 4 x 4 mm in cross-section. The children were absolutely sure. Either it would hold or it would not. That was for certain. No matter what, there should not be any areas that had fewer rods than others. That would cause the tower to collapse. It was also a good thing that the rods criss-crossed each other. It meant that, if one broke, the others would take the load in different directions. It was also a positive thing that the rods went in multiple directions, because it meant that they could all be included – the long ones and the short ones. There was always somewhere that they could fit in. The Tower of Rods might have been the most rational structure we had made, because there was no wastage. All the lengths were used. And when the rods were placed in different directions, they could form shapes that resembled many things: a forest, a dress, something mysterious, and that could create different imaginative figures. The biggest inspiration was that everyone's efforts and all the rods put together would get the flag to the top.

No one would predict that a nine-metre-high tower of spaghetti rods would have a long lifespan. We had nailed it firmly to the plank flooring that it was standing on, and attached three guy ropes from the centre of the tower to the ground. The wind pulled at the structure and the rain softened the rods. With its nine metres, it acted as an excellent windbreak, but the biggest danger was probably excitable partygoers on their way home from nightclubs, who might be tempted to test the structure that Saturday evening. But it was still standing the next morning, and the next. After a week, the Foundation telephoned us to ask how long the Tower of Rods was going to be there. What a victory for the young constructors!

Mood Catcher, Going Light and High

The criteria for this project were to get as high as possible and to use as few materials as possible. The question was how high we could build. Very briefly, what it boiled down to was to get hold of the mobile crane and lift that could reach highest. In the end, we found a lift that could get us up to 30 metres. If we wanted to go higher, we would have to get hold of a lift and mobile crane from another city, and this was not possible within our experimental budget. Building a structure the height of a 10 or 11-storey building, i.e. 30 metres, in just a few days was definitely a worthy challenge.

The construction crew, this time made up of 20 people, was challenged to find different modular systems that could be stacked on top of each other. We wanted to build high using a rational structure. This meant that the elements had to be based on a construction principle that allowed them to be reinforced where the weight and the torque were greatest, and reduced where the forces were small – without altering the style and appearance of the structure. The structure needed to be elegant and light.

First of all, we carried out some preliminary experiments and trials with constructive and geometrical models that could be mounted on top of each other. The double-curved surface was tested out using a saddle shape. The saddle shape is like a rectangle in which two opposing corners have been lifted up, while the other two have been pulled down. A hyperbolic paraboloid is a double-curved surface that can be constructed using straight lines. This surface was put into a rotational body – a cylindrical shape with a base and top rings. The side surfaces of the cylindrical shape were made of diagonal stays that intersected. The diagonal stays formed a pattern of parallelograms that were all four-sided and not statically stable. The constructive, stable system is connected here to top and base rings on which the diagonal stays form statically closed triangles. In order words, the intersections would be screwed together at the points where they formed triangles. With its double-curved surface and locked diagonals and triangles, the cylindrical shape achieved its special strength and stability. We would be able to connect new elements at the top and bottom.

With the cylindrical or cone shape as the point of departure, the next move was to work on the form and visual effect of this construction principle. As mentioned, the maximum height of the technical equipment, such as the lift and mobile crane, was 30 metres. We wanted to use this to its maximum by giving the crane's final lift an overlength, so we set the height of the structure to 32.5 metres.

We finished ten modules, and the exhilarating construction operation could begin. One by one, we erected the tower of modules. Because of a storm that was causing strong, gusting winds, this work proved to be a huge challenge, and far more time-consuming than expected. After a long day and evening, we put the top in place, and a 32.5-metre-high structure stood proudly in the middle of Bergen.

The tower was a hollow shell. Going inside and looking up at the geometry gave a special impression. In order to make the tower atmospheric after dark, we fitted spotlights at three levels, and it was also lit from ground level. We experimented with various lighting and mood effects. One of the students described the structure as a real mood catcher.

The 'Mood Catcher' was made of about 900 pieces of 5 x 5 wood, with a total length of 2.4 km. These gave it a total weight of



Image 4. The structure rising

2,900 kg, which is incredibly light for a 32.5-metrehigh structure. It corresponds to 260 kg for a standard storey. Again, it was the shape and the way the material had been connected that made it a surprisingly strong structure. In 'Mood Catcher', it was the hyperbolic paraboloid that was used systematically.

Experimental Wooden Structures

For the last decade, we have been challenging and experimenting with the wood as a material, constructively, structurally and materially. Under the theme 'It´s not an experiment if you know it will work' – structures have been planned, built and tested. All the structures have gone far beyond what calculations and engineering indicated was possible. Projects falling down, sinking, walking and standing have given us a strong platform and helped us to know this fantastic material.

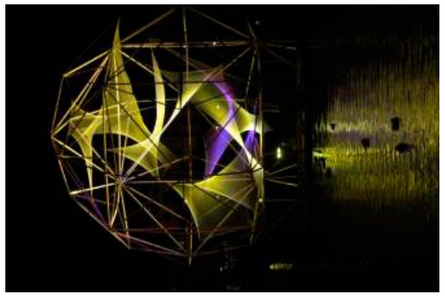


Image 5. The Globe
The discovery of a threedimensional or multi-dimensional approach to the linear interplay between compressive and tensile forces with connections to torque, shear forces, rotation and twisting



Image 6. Lotus
When we look at the construction principles in nature, we discover that the optimally minimised surfaces in terms of stability have a double curve: shells, seeds, pips, nests, petals, sepals etc.



Image 7. Swarmers
The ‘Swarmers’ project focused on what we could call the constructive joy of juggling. It is an extremely stable structure that ‘hangs within itself’.



Image 8. Arigato
The oldest construction principle is building by laying one piece on top of another.

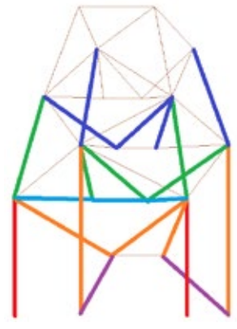


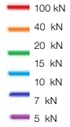
Image 9. Hunter
First, we set up a solid anchorage on the ground, and then we built sideways as far as we dared. Then to continue supporting the structure with posts.



Image 10. The Bridge
Our point of departure was again to challenge the constructive properties of wood – structurally and visually. In constructive terms, it was tempting to test a form based on the wood’s ability to withstand bending as well as pressure and span forces.







KHiB Bergen tensegrity 2015
Wirekræfter for valg af wiredimensioner v1.
Brudlast wire skal være større end to gange den
viste kraft.
Forudsætninger:
- Max modvægt = 10 ton.
- Max vindhastighed = 12 m/s
Henrik Almegaard 23/10/2015



Image 11. Working out the concept in models - then going much further than the calculations

Wood You

Our last project “Wood You” was a tensegrity structure. This structure had three elements standing on the ground. From the top and in between these standing elements, another three new elements were assembled, hanging from wires, creating a new level. From these three, we repeated the operation, assembling three more hanging elements. In this way, the structure rose.

The project was a big experiment. First we made sketches, then we tested principles using models. From there, we went directly to working in a scale of 1:1. Engineers with 3D calculation programs ‘tried to follow’. This was a struggle (or more a battle) between the tensional and compressive forces.

With three elements standing and twelve elements hanging, it is a little bit hard to describe what kind of structure this is. We reached a height of 26 meters, which was far higher than indicated by the results of the calculations based on the material dimension we used.

Reflections

These experiments are full-scale, spatial physical objects. When you work physically, you use much more of your sensory apparatus. This means that your commitment and experiences become much more intense than when you are trying to develop these qualities on a computer or screen. Another important thing is that the discussions and exchanges of opinion with specialists have much greater authenticity when you are in the middle of something, surrounded by an object that is growing.
We began this series of experiments by testing the strength of wood. And the results have shown us that there it has power – particularly when you get to know the timber, and connect form and material. Wood is extremely strong compared with other materials, and, in relation to its own weight, it is actually stronger than steel. But the experiments have not just been about strength.

One of our main goals was to demonstrate a wide-ranging world of design, and to inspire people to experiment. To discover, find, develop and experience. We have seen everything from strong, tight geometry to free and organic structures – from a conceptual approach to a focus on the strength of details in joints – from clarity and definition to chance and the labyrinth. We have connected the standardised method of prefabrication into shapes that originate in repetition, additions, rotations, linear interplay and rhythmic movements. Ancient mythology and cults have provided inspiration for new interpretations.

Open design for experiment

This way of conducting research gives you answers to challenges you want to test – and it also opens up for totally new experiences. Working in this way activates our sense of beauty. Someone who challenges must constantly, both intuitively and consciously, address the many choices that arise as regards proportions, balance, the interplay of lines, dimensions and harmony. When a form works, it is seen as having positive qualities. It is beautiful. Beauty matters. Sensual experiences have always been important considerations in connection with the choices we have made, and external form and aesthetic appeal are very important in our everyday lives. This tells us that the aesthetic is an independent force that can trigger feelings – things that can be sensed. Beauty gives us a pleasurable feeling. This leads our thoughts to the classical philosophers who described 'the beautiful, the true and the good' as three aspects of one and the same thing. For the classical philosophers, truth was always beautiful and good, beauty was always true and good, and the good was always true and beautiful. Most of all it stimulates the further development of the professions of design and architecture.

References

Projects:
All projects shown in this paper are designed and constructed by:
Students at the Department of Design, Bergen Academy of Art and Design, Norway
Under the leadership of Petter Bergerud, professor, architect

Photo:
Paal Hoff, Bergen, Norway

For inspiration:
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Serendipity and the urban transect walk
Reflections on design and cultural mapping in arctic cities

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ABSTRACT

This paper presents and discusses the use of serendipity in the design and use of experimental urban mapping tools and practices. We address the issue of error in design processes by exploring the role of serendipity in an experimental cultural mapping activity enabled by an iphone app of our own design. Our approach integrates aspects of chance and arbitrariness, and thus an alternative to dominant urban mapping methodologies. Also, our mapping approach contributes to a critique of digitally based forms of knowledge and functionalist dimension of locative app development and design. The uses of emergent, accidental and vagarious discovery are studied through a series of mapping instantiations to annotate urban transect walks in several Arctic cities. Our experiments show that issues of serendipity are productive in terms of adding new dimensions of creativity to practices of mapping, i.e. they open for new ways of looking, annotating/building knowledge and producing meaning in rapidly evolving Arctic communities. We discuss how the use the mapping approach can be understood in terms of serendipity and, finally, in what ways serendipity operates and informs notions and practices of transdisciplinary, participative and situated urban mapping.

Keywords

Serendipity, app, locative mapping

INTRODUCTION

In recent decades, there has been a rapid expansion of mobile and locative media. Largely this has been made possible through the development and mass availability of smartphones. In this paper, we take up the notion of serendipity to address the ways in which coincidence, chance, co-occurrence and happenstance may be unpacked concerning experimentation in design and urban mapping. We centre this on the development and experimental and situated engagement with a locative media urban mapping tool. Much of the research literature on mobile and locative media application or 'app' development and use is functionalist in character. Most apps for urban daily living, whether for location, identification or sharing are reported in the literature in terms of efficiency, ubiquity and seamlessness (Dourish & Bell 2011), and as part of the logics of digital systems and services within neo-liberal market discourses around the technologically 'smart city' (Albino et al. 2015). Such functionalist app development and use is seldom discussed as design experimentation in its own right, nor are qualities such as collaborative conceptualisation and shared shaping of apps as design artefacts and affordances for communication. However, there is a vast body of work on Human Computer Interaction (HCI) in mobile communication, sociological and contextual aspects of mobility studies (e.g. Hjorth et al. 2012) and socially mediated and distributed communication (Kaplan & Haenlein, 2010; Foth et al., 2011).

Mobile devices, tools, services and communication now pervade our cities, and inhabitants are actively engaging with place-based, kinetic and distributed communication. Yet the uses of locative and mobile devices and apps extend well beyond deterministic frames: popular culture and post-structuralist qualitative inquiry have shown us that the unscripted, emergent and contingent characterise our mediated meaning making in cultural settings and through shared engagement. Serendipity is part of our daily urban lives and the perception of cities and associated production of urban space is non-linear, and includes the digital virtual. Thus, we need "to investigate … how to make the mediated city legible through developing tools for mobile literacies … [that] are also locative enactments that enhance understanding of urban life" (Hemmersam et al. 2015: 184).

One non-digital tool of local enactment already taken up in urbanism is the transect walk. This is a participatory as opposed to a survey oriented approach to urban mapping: it takes a deliberate line across an urban setting and engages participants in acts of embodied engagement depending on a given view or task. With origins in the global south concerning urban economics and development, we have adopted the tool as part of a set of related qualitative methods to engage contextually and critically with matters of landscape, climate change and future directions of Arctic cities. Our inquiry has been to experiment with the transect walk in the wider context of embodied, experiential and experimental cultural mapping (Duxbury et al. 2015) that also involves the digitally mediated city.

This paper addresses two related questions concerning the transect walk as a device for understanding the city, and specifically Arctic cities: 1) How is serendipity embedded in the cultural mapping orientation of the design of a locative media urban mapping tool? 2) How can the experimental, contextual and participative uses of locative media based mapping be experienced and understood in terms of serendipity? We address the first question through a short description and reflection of the design of an app called MAPPA we initially developed as part of research into unpacking the networked rather than smart city. We take up the second question by way of reference to three categories of serendipity (Fine & Deegan 1996): temporal serendipity, serendipity relations and analytic serendipity. We relate these specifically to the uptake of digital mapping tools through the practice of the urban transect walk. Methodologically, we frame the paper in relation to participatory design and multimodal and sensory ethnography. Overall we discuss the role of serendipitous characteristics of insight, chance and discovery (Fine & Deegan 1996) with respect to digital mobile tools as well as situated uses in Arctic urban inquiry and their implications for experimentation in design knowing.

Research Perspectives

Locative Media

To us, urban mapping refers to creative and experimental practices that make extensive use of the networked city's digital affordances. As Gordon reminds us: "The map is no longer conceived as an abstraction of abstract space, but as a marker of lived space" (2007: 898). Thus, "cartography is performative and intrinsic to urban life" (Brook & Dunn, 2013: 12). In the era of networked technologies an increasing number of maps are plotted with new kinds of (personal, social, locative) data. Such maps can be considered both mediations and representations of everyday urbanism. Maps and digital 'contents' are becoming increasingly more complex cultural entities that invite interpretation and analysis in ways that reflect both their urban and techno-cultural constituencies. Locative media mapping tools are artefacts that communicate selected content in cultural and professional contexts. They are implicated in the dominant technocentric discourse of the smart city which is critiqued by Luque-Ayala and Marvin (2015) relating to the critical abilities and knowledge involved, the politics of its implementation, and the problematic understanding of 'smart' across geographies.

In recent decades, we have seen a significant shift away from abstract and instrumental understanding of space and place towards a more social and geographically informed discourse of space "as a social product – one less designed and constructed than enacted or performed through specific behaviours and practices" (Shepard 2011: 22). Also, we have seen renewed interest in mapping and representation as an effort to come to grips with the "the variety of territorial, political and psychological social processes that flow through space" (Corner 1999: 227). Space is here understood as "a field of connections, relationships, extensions and potentials" (Corner 1999: 224). Emerging new modes of creative and experimental mapping (within disciplines of urbanism, landscape studies, architecture and design) thus represent efforts at getting inside the complexities of space and place, i.e. as ways of mapping flows and invisibles (Allen 2000; Amoroso 2010).

This represents the theoretical context for much of our previous work in designing and exploring experimental urban mapping tools in social media (Hemmersam et al. 2012; 2015; Morrison and Aspen 2013; Morrison et al. 2013). This paper represents an effort for further theoretical elaboration around the creative potentials that are contained in of digitally informed experimental mapping. The topic of serendipity gives us an opportunity to reflect more thoroughly around issues of experimentation in relation to designing practices of urban cultural mapping.

Mapping in the Field

The main empirical material for this paper are not the mapping annotations per se, but the embodied and emplaced spectre of 'forces' that play themselves out in and through the act of mapping in the field. Our main focus is to approach the interpretive layers that were established among the participants as they were engaged in the transect walk. Those layers, consisting of shifting sets of sensations, associations, negotiations and deliberations, could be said to affect the stories that are told and, the digital mapping annotations that are made using the app and the meanings that are produced.

In the following we present an analytical framework that lays the ground for identifying and exploring the productive role of serendipity in (designing for) practices of urban cultural mapping. The transect worked as an overall structure for both the actual walks and the related cultural mapping. Thus, it constituted a major constraint for the activities and experiments that took place, which makes it easier to identify the actual kind, role and importance of serendipitous features. One could say that the interplay between the constrained and chance plays out productively in processes of urban cultural mapping.

On Serendipity

The notion of serendipity appears in literature, art, science, culture and urbanism, and refers to "discoveries, by accidents and sagacity, of things [one is] not in quest of" (Walpole, 1754 in Merton & Barber, 2004). It is the search for something that turns up something entirely different and represents knowledge that is unscripted, surprising, accidental and even occasional. The concept was introduced in natural sciences around 1940 and later in the social sciences describing "valid results which were not sought for" (Merton & Barber, 2004). While influential, the work of Merton is still framed within scientism. Ethnographers have acknowledged the presence and shaping effects of serendipity in fieldwork

(Rivoal & Salazar; 2013) including occurrences of messy methods and texts in providing accounts of processes and contexts that are emergent, transitory, temporary and liminal. Fine and Deegan claim that “planned insights coupled with unplanned events can potentially yield meaningful and interesting discovery” (1996:434). Further, they demarcate three categories of serendipity: “temporal serendipity (happening upon a dramatic instance), serendipity relations (the unplanned building of social networks), and analytic serendipity (discovering concepts or theories that produce compelling claims).” In terms of qualitative inquiry methods, they argue that each of these categories depend on our readiness to engage with chance events and to infuse them within our research reporting by virtue of its inductive character. We would extend this in the context of design centred inquiry to also working abductively. By this we mean that design making and research analysis may be realised within and across various modes of inquiry in which serendipity may have ffect and ramifications.

Mapping

Maps and mapping are “participatory, generative, revealing, enabling, performative” (Hall, 2012: 157). Tracing its lineage to the psychogeography of the Situationists (Debord, 1958) architectural mapping practices have continued to feature aspects of serendipity as a way to capture urban life, even including approaches that operate as “a kind of streetlevel ethnography that is often highly personalized and peculiar to places and individuals [and in which] the fieldworker/ mapper gains a remarkably detailed and socially colourful sense of local dynamics and desires” (Corner, 1999: 243).

The urban transect walk is a participatory mapping method that deliberately cuts across the urban landscape. It is used for appraising local economies in cities in the Global South by organisations such as UN Habitat and the World Bank, where it functions as an alternative to survey-based forms of mapping (Pretty, 1995). Our version of the transect walk references literature on walking in ethnography as a sensory and embodied experience (Pink, 2008), and a “conscious observation through emplaced movement” (Jung, 2014: 621). Ingold and Vergunst (2008) and Powell (2010) articulate walking and mapping as a place making activity. In the transect walk, the line is a tool: it is partial, liminal and not comprehensive. Its purpose is to look for difference and diversity, not averages (de Zeeuw & Wilbers, 2004). The act of walking brings forces into play, but the emerging mapping is as much a product of the activity as of the landscape and functions by foregrounding our ‘luggage’ of pre-configured notions (Traganou, 2009) and the multiplicity of sense of place (Massey, 1994).

Arctic Transects

Changes in the Arctic due to climate change, including urbanisation, industrialisation and new shipping routes (e.g. Arbo et al., 2013; Smith, 2011). Arctic settlements are seen as either underdeveloped indigenous communities or unregulated industrial settlements exempted from normal regulation. In the Arctic, community development, which is seen as necessary by outsiders, is often considered to be outsiders’ business by locals. Adding to this problem is the increasing transient population, including miners or seasonal employees in other industries. The architectural and urban planning history of colonialism produced, as Liscombe argues about the Canadian Arctic, “site[s] of utopic imagining and dystopic intervention” (2006, p. 64). Even today, few new models for Arctic urbanism have emerged beyond modernism (Hemmersam, 2016; Marcus, 2011)

The multidisciplinary Future North project is engaged in various experimental approaches to investigate Arctic communities and landscapes and to build knowledge of ‘future’ landscapes developed through social, individual and material agency. The aim of the project is to articulate and narrate future thinking with and from within the landscape that goes beyond dominant regional narratives. The purposes of doing transect walks was for the multidisciplinary research team to become familiar with characteristics, features, arrangements and placements in various Arctic urban settings through a shared activity.

Modes and Methods of Inquiry

The MAPPA mapping app was developed as an investigation into the actual design of social media outside of computing research venues, through the development of new and more place sensitive ways of programming locative media applications. Mapping includes a variety of techniques and tools relating places and spaces to cultures and lived experience (Hemmersam et al., 2012). Initial app development experimented with ethnographically inspired forms of urban cultural mapping with the purpose of supplementing conventional projective mapping with relevant forms of knowledge for non-standard urban contexts. These intentions were mapped on to features and affordances of available technology and the expertise and interests of the research and development team. The resulting GPS based mapping app works by enabling real-time, on-site and shared annotations using text, photos and thematic hashtags, while providing access to social media channel Instagram. Tracings of mapping sessions can be downloaded as editable KML files for post-production in geobrowsers.

The development of the app and subsequent experimental use represents a design based qualitative inquiry that goes beyond anthropological reading of design to an intersection of participative design and practice (Mainsah & Morrison, 2013). Our mapping using the app can be understood as open and ‘inventive’ experimentation (Lury & Wakeford, 2012), reflecting overall ethnographic approaches to finding rather than confirming, with a focus on the emergence rather than conformation of knowledge. Thus, serendipity is designed into the tool itself as a core feature in terms of how it structures mapping activities. Its mark-up of individual points counteracts traditional forms of comprehensive mapping, and it facilitates mapping while in the field, thus exposing the mapper to multiple impressions and unforeseen events. This relates it to forms of sensory and multimodal ethnography (Pink 2015), including walking, image making, dialogues in context, verbal-visual relations.

Sites of Serendipitous Experimentation

Our transect walk mapping of five Arctic cities took place between September 2013 and May 2015 in Murmansk (Russia), Vardo (Norway), Tasiilaq (Greenland), Fermont (Canada) and Longyearbyen (Svalbard). Eight mapping sessions were conducted, each a variation of the previous ones, responding to local conditions and earlier experiences. We tried different transect lines, reversing directions as well as mapping individually, in teams and with locals. Using the MAPPA app ensured interaction with digital locational information.

In order to analyse the role of serendipity in the mapping activity, we find it useful to apply three analytical concepts for understanding serendipity (Fine & Deegan, 1996). They are 1) “Temporal serendipity (happening upon a dramatic instance)”: we see this as STORY (such as when, by being at the right place at the right time, memorable events occur that turn out to provide new insight); 2) “Serendipity relations (the unplanned building of social networks)”: we see this as SOCIAL (such as encountering locals in everyday activities) and, finally, 3) “Analytic serendipity (discovering concepts or theories that produce compelling claims)”: we see this as concerning IDEAs. In order to approach these, we zoom in on two contrasting transects in very different Arctic cities, where the transect lines deliberately run across the greatest variety of urban structures. In this paper, we present a selection of examples that provide insight into various types of serendipity. We focus on the interpretive layers of the activities in the field, and build upon reports on discoveries and insights from individual researchers after the event.

Urban Transect Walk 1: Murmansk (11 September, 2013)

Murmansk is the largest city in the Arctic. Its development followed the Soviet military and industrial mega-project and after 1989 it has experienced a decline. Visiting the city, we wondered what could possibly be the future for urban living in this utopian modernist formation. Walking through the dilapidated Leninskiy district with youths from the Mr. Pink incubator for cultural entrepreneurs, we roughly traced a line towards the north following footpaths, crossing a schoolyard, climbing over district heating pipes and venturing into the backside of the city. We ended the trip at the smelly river that mark the northern perimeter of the city. The decaying buildings are fascinating and picturesque in their semi-ruinous state and are a reminder of lost aspirations.



Figure 1. In this early transect less emphasis was placed on following the line closely. Participants: Aileen A. Espiritu, Kjerstin Uhre, Janike Kampevold Larsen, Peter Hemmersam, Andrew Morrison, XX, XX, XX, XX, XX. The transect KML file was imported to Google Earth. Map data: Google/Digital Globe. Figure 2. Encountering the garage city with local informants. Photo by authors. Figure 3. Visiting the candy store. Photo by authors

STORY: “It was the candy shop that was in an out-of-the way place, but seemed to be thriving. It was more the evocation of childhood for our Mr. Pink companions that made it stand out for me. Personally, it reminded me of my first time in Russia, still the USSR, (Leningrad) when even in times of having to use food ration coupons, confectionary sections of stores seemed to bring colour to the drabness.” (Aileen Aseron Espiritu) By being at the right place at the right time the observer may record events that frame powerful narratives. Witnessing the encounter with childhood memories made the story of experiences from the USSR come alive. This narrative provides an important corrective to the current retail iconography overlaying the Soviet city.

SOCIAL: “At the end of this walk, as we were walking back from the river I think, we passed a school or a seamen’s center, cannot quite remember what institution it was. In front of it XX or one of the other young people told me about how this was his/her favorite view to the Murmansk fjord/river. To us, a messy semi industrialized zone with some greenery – to them a fond view of the water that they had almost no access to. To me this was a reminder of how adaptable we are as humans. We find pleasure and solace in whatever material landscape we are in. The youth also told us how they used to play by the stinky stream we visited – to us a proof of extensive pollution, to them a refuge – a childhood paradise with water coming through.” (Janike Kampevold Larsen) While our academic contacts were less accessible, the youth interacted with us as “serendipity relations”. Their account demonstrated that the city is a continuously produced cultural landscape and reminded us of the importance of bringing out local voices in our appreciation of landscapes.

IDEA: “Arriving at the edge of the city, we encountered the omnipresent Soviet era garage-cities where the (predominantly male) population has traditionally escaped domestic settings. They were a bit like Mediterranean necropolises or the Feria in Seville, parallel or ‘mirror’ cities with alternative social norms.” (Peter Hemmersam) In this encounter, we are reminded of Foucault’s heterotopias (Shane, 2005) that are real places imbued with exclusion and even deviance.

Urban Transect Walk 2: Longyearbyen (26 May, 2015: 14h00-18h00)



Figure 4. Transect start: 78.229034, 15.591374; End: 78.216174, 15.675965. Participants: Bill Fox, Aileen A. Espiritu, Kathleen John-Alder, Janike Kampevold Larsen, Peter Hemmersam, Andrew Morrison. Image data: Google/DigitalGlobe.

Longyearbyen is a mining community and the administrative hub of the Svalbard Peninsula with a temporary population of around 2000. Currently the coalmines are closing down, and the local economy is pivoting towards tourism, research and education. The town has an ad hoc industrial character. During our walk, along dusty spring roads we wondered about the precariousness of the city losing its main industry, but contrasting this we noticed that there was a sense among locals of being at the centre of political and public interest.



Figure 5. End of the snowmobile season. Photo by authors. Fig. 6. Boats for summer and winter tourism. Photo by authors. Fig. 7. The Longyearelva river landscape. Photo by authors.

STORY: “At the pier we saw the Nordlicht, a steel-hulled sailing ship that had spent the winter frozen in place in a nearby fjord to serve as an overnight destination for tourists on snowmobiles from Longyearbyen. It had arrived here only two days previously on its way to spend the summer season along the mainland coast. Nearby we found a local cruise boat with a Filipino crew operating day trips to Pyramiden and Barentsberg in the summer months.” (Bill Fox) This “temporal serendipity” could only be recorded as we were at the right moment at the right place, and provided insight into the seasonal tourist landscapes.

SOCIAL: “During our walk, we accidentally met a representative of the Svalbard Business Association who was unloading his son’s orange snowmobile next to his house as the season was now reaching an end. In fact, the town was full of snowmobiles parked randomly outside houses or in large areas. He told us about the different movement patterns throughout the town in summer and winter, about the use and amount of scooters, that companies own most of the scooters, and that there are 13 snowmobile sales, service and repair businesses in town.” (Andrew Morrison) This serendipitous encounter gives us insight into the important role and workings of wintertime mobility in the town.

IDEA: “we had to cross the Longyearelva River that divides the town in two. After we descended into the excavated riverbed and jumped the river that was still only a trickle at this time of year, we were struck by a sudden visual connection to the surrounding mountains and natural landscape…The urban landscape that we had been walking through, and which forms a thin veneer on this rugged landscape, immediately evaporated. It was a perceptual flip-flop between spaces – city and landscape. The river space was machine-contoured to channel the water flow. The result was a miniature, or model recreation, of the natural glacier valley – a mechanical reproduction of the natural erosion processes. This duality of form reinforced the fact that the landscape is embedded within the city, just as the city is embedded within the landscape.” (Peter Hemmersam) Crossing the river following the transect line rather than a road bridge serendipitously lead us to engage in the renegotiation of aesthetic landscape theory in the Arctic.

Results and Discussion

The three analytical categories have proven to be heuristically useful for discussing the reports from the mapping participants, especially in terms of identifying how various dimensions of serendipity play themselves out in and through the actual transect walks – as temporal, relational and more analytical facets and aspects. Thus, our selection of examples shows that “chance events can be made serendipitous” (Fine and Deegan: 5) if the events in question provide the opportunity for story telling, social reflexivity and idea production. The two examples of story telling from Murmansk and Longyearbyen show that seemingly insignificant observations and events can provide the spark for rich narratives and speculations. In a similar manner, we have seen examples of how the dynamics of collaborative mapping spur reflections (and memories) about a range of social issues and relations. Our last set of examples illustrate how observations and encounters with physical features trigger the participants’ imagination and creative capacities for establishing connections between the here-and-now of the transect walk and more abstract concepts or theories.

The reports discussed here reveal that issues of serendipity play an important role in making the mapping participants see the urban environments in new and fresh ways. Furthermore, capacities of imagination, speculation, storytelling and theory building can be spurred. Our mapping practices and findings can be seen as a critique of the knowledge power dimension of prevalent digitally enabled functionalist forms of urban mapping.

Conclusion

We have used the transect walk in Arctic cities as a basis for exploring the productive role of serendipity in practices of urban cultural mapping. Our findings show that there is a strong dialectical relationship between the constrained, in terms of the transect’s role in determining the actual route, and issues of serendipity. The transect functions as an overall framework for what kind of features that can be seen and encountered, while the serendipitous manifests itself through chance and unexpected events that spur the participants’ imagination and reasoning. More specifically, the productive role of serendipity has been explored as processes in which temporal, relational and analytical features play themselves out. Furthermore, the participants’ understanding of Arctic cities seems to have evolved in much the same way that serendipitous events interact with the constraints of the transect. The interpretive layers of our research indicate a strong dialectical relationship between preconceived notions about the Arctic and onsite observations and events that contribute to adjustment and correction of such understandings.

We have heuristically investigated the crossover between a locative media app as tool, the contexts of the Arctic cities, the transect walk as urban mapping device and experientialist uses that include reflections of the operations of serendipity). Our challenge has been to move beyond revelling in the multitude of unforeseen events and impressions as evidence of the multiple senses of place that counteract hegemonic narratives of the Arctic, to reflect on how serendipitous events and encounters leads us to discovery and new insight. For us, mapping “highlights and displays the ways in which place configures a sense of self in relation to historical, geographical, and localized environments” (Powell, 2010: 553). We experienced that serendipity is an important and useful component in taking up and being open to the relationship between the tool, our expectations and perceptions of the activity and the possible, tangential, and accidental in situated urban inquiry. Concerning serendipity, we concur with Fine and Deegan (1996: 11) in “reject[ing] the perspective that it is the roll of the divine dice that determines if anything interesting is to be learned. It is through our intellectual readiness, coupled with exposure to a wide range of experience, that we create a sense of lived experience – ours and others. Each researcher must be ready to seize the clues on the road to discovery.” Serendipity is useful in helping a research team orient itself as a group of individuals and collectively in early phases of observing and interacting with a previously unvisited locale. The open nature of the shared task of walking the transect and uploading locatively prompted notations allows for the unexpected and the situationally inflected to be connected and therefore discussed and exchanged. Our aversion to reading off the surface of the landscape and off the material uploaded to the surface of the smart phone screen allowed us to place serendipity as more than mere chance and error. It is important that you write for a general audience. The guidelines in this document are intended to help you achieve a professional presentation. By adhering to the guidelines, you also help the conference organizers in reducing their workload and ensuring impressive presentation of your conference paper. We thank you for your cooperation and look forward to receiving your conference paper.

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Design fiction: experiments in error

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ABSTRACT

What could go wrong?
In the last decade, design fiction has emerged as a novel approach in the toolkit of design research; a means to focus the audience on the future for purposes of discussion and debate. This paper will concentrate on the growing need for design fiction less as a means of artistic expression and more as a practical application of design thinking toward the thornier issues of technosocial change; as experiments in error.

Material failure in form and substance must ultimately accommodate less tangible, harder to circumscribe artifacts. Defining error in a world 'post-industrial design' may not always be physical or even comprehensible, manifesting itself less in material failure and more in human behavior. Indeed, to contemplate these new mutations is to make our design more humane.

In this paper, I will argue a case for urgency that stems from how readily humans adapt to change, the rate at which technology accelerates, and a lack of futures thinking in both design and science. Design fiction is one such method of futures thinking. And, while there is no prescriptive methodology for building a design fiction, I will describe a typical approach, the technique of 'guerrilla futures', as well as operative benefits from crafting thought-provoking instantiations of future scenarios.

Design fiction becomes one of many possible methods by which designers, design educators, and design researchers can accept a growing responsibility to ask, 'What if?' in the present to avoid asking, 'What now?' in the future.

Keywords

design fiction, design futures, design research

A New Context for Error

The standard interpretation for error has long centered on a deficiency of some sort that prevents us from achieving our intent. But, as Cameron Tonkinwise (2016, p.19) notes, the Silicon Valley mantra of 'fail early, fail often' is meant to exploit failure. 'Designers make (code) products (applications) that are shipped into household and workplaces in order to determine if they are failures rather than before they are determined as failures. (p. 8)' It would seem we have come to rely on error not just in the prototype, but also in the testing ground of human experience. Tonkinwise (p.13) suggests we now see an error as something transient and impermanent. We can 'undo' it with a keystroke. It becomes a virtual mistake, moving beyond the material.

As the material gives way to the virtual, and the context of error becomes derivative, how do we define the role for designers both to navigate and contribute in this new terrain? In this expectation of human error, I see three concurrent conditions that prescribe a call for action: the adaptability of humanity, the exponential curve of technological advance and a lack of futures thinking in science and design.

The Human Sponge

Futurist and tech writer Andy Walker says (Mac, 2016) '[…] anything that's new seems like a threat […],' but these confrontations are mitigated because '[…] technology comes along in increments.' Kurzweil (2005) concurs: 'We are not going to reach the Singularity in some single great leap forward, but rather through a great many small steps, each seemingly benign and modest in scope.' History has shown that these steps are incrementally embraced by society and often become grand in scale. Such scalable events can become complex systems with a life of their own. The automobile is efficient as a means to get from point A to point B, but we see a much higher level of complexity in the systems that sustain our travels; infrastructure, roads, traffic management, fueling, maintenance, safety, etc. We see similar systems resulting from air travel, the Internet, and the smartphone. Each of these technological developments has initiated a chain-reaction of supportive rules, dangers, legalities, even behavioral disorders that are difficult to grasp. And while there is traditionally some initial reticence to these technologies at their introduction, publics have ultimately adopted them and asked for more, often in advance of a serious review of the ramifications of ethics, policy, and human behavior.

The Rate of Change

The intimidating idea of accelerating change was catalyzed soon after the industrial revolution began to produce a sort of pre-Toffler future shock. Buckminster Fuller (1938, p. 279) referred to 'ephemeralisation' as the ability to do more with less as he noted that the acquisition of human knowledge was accelerating. With the advent of the computer, the speed of change began to increase. Gordon Moore's law of semiconductor capacity doubling every two years has proven accurate for decades, and according to Kurzweill (2001), 'There's even exponential growth in the rate of exponential growth. Within a few decades, machine intelligence will surpass human intelligence, leading to The Singularity — technological change so rapid and profound it represents a rupture in the fabric of human history.'

The World Economic Forum (Myerson, 2015) cited 10 top emerging technologies. The list included fuel cell vehicles and next generation robotics, but it also included emergent artificial intelligence, precise genetic engineering techniques, neuromorphic technology and the digital genome. Some of these ideas may seem foreign to us or even meaningless, yet any has the potential of being disruptive on a social, economic, and personal level. Furthermore, they will not remain neatly compartmentalised. We must also consider the likelihood that two or more will converge in unforeseen ways.

Enmeshed within the hundreds of separate, cutting-edge, technological pursuits are new, kinds of systems—those that 'make' themselves. Today, according to Danny Hillis (2016), '[…] we build into our machines the power to learn, adapt, create and evolve. [In the future], We will worry less about the unpredictable forces of nature than about the unpredictable behaviors of our constructions(3).' Hillis asserts that our information systems have produced documents so large that a single individual could never read them, and institutions so manipulative that we abstain from questioning them. The algorithms that we are now writing are designed to evolve, sometimes in ways, we do not understand. The processes that emerge design themselves in the absence of understanding. It is a new kind of evolutionary biology. These processes create what works. A problem arises when what we have created no longer needs us to control it. In fact, we can't. To ask the question, 'What could possibly go wrong,' is almost satirical. Does design carry a responsibility in this unfolding drama?

Future Thinking

The third reason for urgency is that we are not paying attention to the first two reasons. We are in a race to develop new technologies. Bostrom (2015) alerts us to the ramifications of the race to build a superintelligence. He says there are two challenges. First is making the superintelligence which is 'really hard'. The second challenge is making it safe. The risk is that we 'crack the first challenge' without having cracked the second challenge of safety… the technology chase supersedes wisdom and ethical foresight. How should we as designers think in these terms? One method is design fiction.

Experiments in Error

Design fiction brings together four disciplines: science fiction, critical design, conventional design and foresight studies to craft believable future narratives. No rule says these stories must be dystopic, but to examine utopic scenarios is to miss the errors that inevitably accompany progress and change. Despite our efforts to reframe error within the context of 'live' testing, it remains a design responsibility to ask, 'What could go wrong?' In turn, we must be open to the ramifications of the solution should it go right and the resulting scalability to systems and the entailments thereof. Is the mere idea of creating a superintelligence an error?

As an emerging method of design research, there is more than one technique for constructing design fiction. Examples abound, including Bleecker (2008), Auger (2013), Dunne and Raby (2013), among others. Stewart Candy (2013) suggests an approach called 'Reverse Archaeology.' In the same way, archaeologists use found artifacts to piece together the culture from a distant time, 'Here the process goes in the opposite direction: you will use a future scenario to generate a fragment from a world to come (Candy, 2013, p.1).' Candy also describes the idea of experiential futures that, '[…] involves creating a Performance to bring people into a future. (Candy, 2013, p.1)'

A sub-category of experiential futures, (Candy 2010) is called 'guerrilla interventions.'

Its aim as a practice is to introduce scenaric possibilities to publics that otherwise may not be exposed to them, or that, while perhaps aware of the possibilities in question, are unable or unwilling to give them proper consideration. […] by rendering one or more potentials concrete in the present, whether or not they have asked for it. (209) [Emphasis added].

A Guerrilla Future

Borrowing on Candy's technique, which I call a guerrilla future, I created a 2013 pilot study. Students distributed roughly 1000 'paper cam' labels in a centralised location on my university campus. Around this artefact we built a scenario: The cameras are networked and monitored by artificial intelligence (AI) to watch us 24/7. This AI, through predictive algorithms, facial recognition, voice analysis, and body language, can learn to identify potential threats, without the potentially pernicious and judgmental eyes of humans. And so most of the society gradually acquiesces to the technology. These cameras served as a concrete rendering of a future artifact to initiate the desired thinking to a public that would not otherwise be engaged. The designer's intent in this fiction was to examine the social after-effects of ubiquitous surveillance in every aspect of life. Is becoming immune to being watched an error?

Design techniques like these have unlimited variations and generate necessary conversations as we approach an increasingly ill-defined future. It is in this process of error-focused speculative futures that designers can begin to incorporate the missing links: the disciplines and rigors of foresight and future studies. Indeed, in grappling with any modern, wicked problem, there must be collaboration, with the stakeholders and well as experts. The designer can function not only as thought-leader but also as facilitator and convener for these discussions. Herein there is a

more robust method, benefitting not only the design process but also the framework for resolution. I will focus on three benefits: Mitigating irrational exuberance, examining systems and analyzing behaviors.

Mitigating Irrational Exuberance (IE)

Coined by Alan Greenspan when he was chairman of the U.S. Federal Reserve Board, IE (Irrational, 2004) is defined as, '[…] unsustainable investor enthusiasm that drives asset prices up to levels that aren't supported by fundamentals.' As humans, it would seem that we have a propensity toward the perpetual upside. The prevailing discourse, often at the hands of global corporate interests or science often promises, as a result of new technologies, an overwhelmingly positive, even utopian future; that technology and human ingenuity will save us from our greatest fears. If we move too fast, and something goes wrong, then human ingenuity again will make it right again. Design fiction enables us to approach the future as it might end up, rather than what it promises to be. How does this help us? By being aware of potential abuses and not dismissing them as, 'the price of progress,' collaborators can conceive safeguards, or revise timelines to coincide with compatible structures or systems. Though often, we reserve critical thinking for design functionality, market success, and user experience, it can also be applied to outcomes, especially in light of the human condition and our propensity to foul things up.

Building Worlds - Examining Systems

Principally attributed as a literary tool for fiction or fantasy, world-building requires that the author/designer create the world in which the artifact can plausibly exist. Plausibility is crucial for compelling design fiction. If the design fiction is examining the culture ten or fifteen years from now, then it is important to recognise that the world will be a different place. Complexities will arise not only regarding the technological advancements that make the artifact possible but the cultural landscape in which it exists (especially if exponential technological growth produces hundreds of new developments from convergent technologies), but also social mores, political shifts, economic fluctuations, changes and disruptions to infrastructures. When addressed with rigorous design thinking, it forces the design team (ideally expanded to include a variety of interdisciplinary contributors) to build new worlds, examine and appreciate the complexity of multiple interconnected systems. Design teams can apply the process of logical succession (a means to anticipate outcomes from present day decision-making), to create futures that seem more plausible and thereby more realistic. The more believable the future scenario, the greater the likelihood that it will prompt discussion and debate about the viability and desirability of that future; how do we ensure it, or prevent it?

Analyzing Behaviors

The scenario plays out daily. People bury their faces in smartphones to assess their health, the weather, their stock portfolio, their popularity among followers, and their relative happiness against an onslaught of comparative Snapchats, Instagrams, and texts. Smartphones interfere with sleep and behavior (Ikeda, Nakamura 2014, p.187), privacy, and safety. Since 2010, there has been a Smartphone Addiction Rating Scale (SARS) and the Young Internet Addiction Scale (YIAS) (Brasuer, 2103). Overuse of mobile phones has prompted dozens of studies into adolescents as well as adults, and there are links to increased levels of ADHD (Seo, Kim, et.al. 2015), and numerous psychological disorders including stress and depression (Ikeda, p.187). We can watch these behaviors play out in the present, but how might similar behavior manifest itself through increasingly accessible and realistic virtual reality (VR), augmented reality or the emerging trend of bio-hacking?

Through design fiction narrative, characters that interact and relate to each other and their surroundings are intrinsic to a narrative; these stories are a means by which we come to grips with resulting human behaviors and social changes that often disappear into the mundane.

Conclusion

The technological advancement of humanity beyond merely post-human, to non-human entities, has sweeping reverberations, along with an undeniable history of the effect that design and technology have already wrought on our biophysical systems and social behaviors. Amidst this, I see three developments that create a climate for urgency. First, the adaptability of humanity to embrace the latest technology tends to mask profound changes that take place over time. Second, if we combine this human pliancy with the exponential curve of technological advancement, there is a real danger that our evolution will be designless formed by the accretion of a thousand random technologies. Finally, there is a fundamental lack of futures thinking among those racing to exploit the possibilities of technological advancement. In light of our human failings and predilections, it is crucial to train a critical eye on how our design, effects systems, and human behavior, and should be a required step in design research. These are also foundational elements of foresight and future studies, which should become part of design research techniques and collaborations.

Designers with design fiction in their design thinking toolbox can bring these methods to a wide range of collaborative challenges in medicine, genetics, politics, the military, or any techno-social endeavor that promises one-sided benefits.

We may have reached the design profession's long-awaited opportunity to convene the wicked-problem roundtable and examine the contexts in which errors, absent an 'undo' key, may be significant. But, to do that, we will have to broaden our scope to engage in government, academia, commerce, science and the public. As well, we need to expand our study to include futures, foresight, systems analysis and ethics, most of which are missing from much of traditional design education and practice.

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The Spanish experience in open design: case studies

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ABSTRACT

In Spain we are witnessing a new generation of entrepreneurs that both design and produce from a craftsman's point of view and who use high-end technology as well. Their work ranges from small series and unique pieces to on-order work that is characterised by a high degree of customisation. In this hands-on way, they can oversee and control all phases of the process and have a direct and personal relationship with the end user, something that is clearly out of the question for traditional industries. In this paper we shall look at a few of these entrepreneurs -- the conception of the idea, experimentation, testing, producing and selling or leasing their creations, alone or in collaboration, and how, in many cases, other modes of action and participation appear and open doors to new collaborative platforms. In the section titled Makerspaces or Open Design resources, we will look at examples which have been supported by these makerspaces and other examples demonstrating iniciatives that include citizen participation, cooperation for development with clear social involvement or that do business in the framework of a collaborative economy.

Keywords

open design, maker culture, design & digital fabrication

1. The Components in Open Design, and Their Activity in Spain

As we have assessed, technologically we are clearly moving from the bit to the atom, from the PC to personal fabrication, as a logical path in the Information Society, which we have observed in reference to platforms and spaces (FabLabs, makerspaces or other laboratories manufacturing), describing the impact of increasingly more accesible technologies and the cultural framework of a new model in which Open Design initiates a new path. We have also seen the antecedents leading up to the development of the Do-It-Yourself or DIWO movements and Maker Culture, with references to various international registers, in which participation, often of young designers, encourages models of social construction that they can feel a part of. We have also discovered the relationship of different educational and social initiatives both private and public, where designers working alongside other professionals, high school teachers and entrepreneurs are the protagonists.

By focusing on Spain we see there is not only the economic crisis, as stated by Pierluigi Cattermole in one of the texts in the exhibition Reset Design, which undoubtedly has accelerated and reinforced the phenomenon, but the only circumstance that drives the dissemination of these practices: "other determinants, such as the availability of new production technologies and the possibility of sharing experiences and knowledge through the network, have led to new forms of enterprise that are their referents both logic DIY and the Maker movement."

As a result, we witness the consolidation of a new generation of entrepreneurs who design and produce with craftsmanship using high technology. They make small series, unique pieces or on order pieces characterised by a high degree of customisation. Thus, they exploit the advantages of controlling all phases of the process and maintain a direct and personal relationship with the end user, something that would obviously be unthinkable for the traditional industry. We will describe how some of them work to devise, test, produce and sell their creations independently or in collaboration, and, as in many cases, other models of action and participation intervene where new platforms or resources appear as Open Design.

1.1. The Experiences from Maker Platforms

The first case we want to provide is supported by the MOB of Barcelona In this case the entrepreneur maker is Xavier Duacastilla, a person with reduced mobility, whose user experience has led him to invent, with technical assistance from the designer and engineer Josep Mora, a method to couple it to a lightweight electric wheelchair-scooter in an easy and comfortable way. He called it Handiwheel and is willing to advise anyone who needs to create it, and has been sharing the designs (currently there is a second version), through Creative Commons since 2013. These designs are allowing many people with disabilities to navigate the city without giving up their manual chair or having to buy an expensive and heavy motorised chair. He acted as prosumer, "it occurred to me the possibility to use the advantages of an electric scooter's low cost and attach it to my manual chair" and transmitted from his website that the cost would be around (scooter + possible "tuning" of + chair batteries) half the cost of a motorised wheelchair on the market.

Another project to be developed in FabLab Barcelona, called "Fabproducts", were some shoes to join "open source" (2011). The main objective of the project was to start production of self-assembled shoes, using the resources of the FabLab and thereby ensuring a sustainable and responsible production. The proposal was supported by microinvesters via crowdfounding. The product development met the following common features of Open Design[1] :

- Using the concept of open designs that can be shared, freely used and modified.
- Achieving a design that is efficient in terms of materials, production time and resource usage at FabLab.
- Using materials that are durable, easy to get, as well as environmentally sustainable.
- Being innovative in the concept of a to-be-assembed shoe, by developing a quality product, with design, modular pieces and easy modification possibilities.

Finally, we would like to note the project, Smart Citizen Kit, a proprietary tool that facilitates data capture and includes citizen participation as a dynamic axis (fig.1). The project was funded by crowdfunding, getting a good reception from the public. In the first phase, using the Goteo platform, Smart Citizen raised €14,000, a figure that was widely surpassed in Kickstarter, where in just 30 days Smart Citizen grossed $60,000. Through this action, small investors began to acquire and install the kit. Today this social ecosystem will become more evident in the new phase of development: the kit, web and mobile app are redesigned to enhance the interactivity of the community and place Smart Citizen in a social network based on knowledge, and using open source technology to integrate citizens in a participatory planning model with a science-based foundation. Now there are 700 kits distributed across all continents, with a presence in over 30 countries.

1.2. The Collaborative Experiences

Among the models that bring us to the more collaborative Open Design, we cite the work of "Made in Madrid" (currently "Made in my City", as it has expanded its range to Valencia) and "Open Collection" of furniture and auxiliary parts.[2] Made in my City is an initiative of the "Builders" collective project that focuses on local, decentralised production, using open and shared design. In order to be able to have the same as everyone, Made in my City is an alternative enterprise, being able to project their own ideas and to see the built result. They call it "an option to purchase artisan", made on request nearby and boosting the local economy. The project aims to promote the talent of our fellow citizens, our neighbors and turn them into: artists, artisans, creators, designers, makers and curious people, those who design and those who build what we need. A disruptived economy transforms the social wealth in real economy. The freedom generates knowledge and open networks between people. The great challenge of innovation is finding easier ways to add ideas and solutions to a collective intelligence that allows for glocal economic ways. It is a new reality where knowledge is global and the work local.

According to Alejandro Fábregas, a member of the collective Builders, his work focuses on the design and manufacture of furniture. The Builder House initiative was the origin of Made in my City, which consisted of a proposal for different shared apartments in Madrid, which were only furnished with a bed, and in which the same occupiers had to design and build the rest of the furniture themselves, aided by members of the collective. The defining mission of this project is: "to create furniture of one's own design, using local materials and global knowledge". Their commitment is to develop technological tools of communication and co-design in order to facilitate converting the skills and knowledge of the community in value, with the fabrication distributed as a collective intelligence that truly transforms our reality – a proposal whose value is to facilitate the synergy between people.

1.3 Experience Related to Citizen Participation

The Ateneos de Fabricación (Barcelona) are the expression of citizen participation promoted by the city council, with important results that are present in a repository of projects and files that are documented for consideration. The consideration may be, for example, a commitment to support the project of another, or can be training for the users of the collective or an activity open to the public, or resources for the center or the projects they develop, or research of materials etc. However, the consideration always involves the documentation and communication of the project and should revert to the users. As we are talking about a collaborative model and social innovation model, there can be numerous and very different proposals for consideration.[3] The social innovation programs of these three current Ateneos aim to bring to the local area the influence of each manufacturing Atheneum, by recognizing and encouraging the hidden talent in the neighborhood and the neighborhood organisations. The dynamics of citizen-promoted innovation is applied to the area's hybridised working groups, looking for diversity of age, background, training, profession (or lack of it), and work through common missions, self-tasking, flexible methodologies, etc., including the making of current design-orientated tools.

Neighborhood or self-organised activities such as those promoted by the Institute Do it Yourself of Madrid, are another example. It is an initiative of the collective Todo por la Praxis, a program of collaborative learning under the maxim: learning by doing. The institute appeals to DIYers, and is part of the culture of self-production involving self-management of what is done. They consider

[1] Goteo.org, 2012. Zapatos para ensamblar. [online] Available at: <https://ca.goteo.org/project/zapatos-open-source> [Accessed 29 August 2016].

[2] My in My City, 2013. Promoting a Glocal Economy. [online] Available at: <https://www.madeinmycity.cc> [Accessed 29 August 2016].

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the model Do It Together using collaborative methods through the processes of collective construction (fig.3). In DIY they are interested in promoting the exchange of knowledge and experience, always linked to direct applications of various citizens' initiatives (vegetable fields, mobile devices, flexible structures, geodesic structures, ephemeral architecture, public street furniture, etc.). The school workshops of DIYS use a pedagogical model where learning takes place through the interaction of people with others in a context of experimentation through action. Experts or collective specialists in different areas teach those workshops. Each workshop is an opportunity for the confluence and exchange of knowledge, skills and abilities. These short-term and thematic workshops can implement and complement educational proceses as an alternative to traditional academic training.[4]

Also, there exists a group of people and communities that promote participatory design and construction within the urban environment, known as Collective Architectures. This is a design group that was born in Valencia from "Makea Tu Vida" and their platform El-Recetario.net, which is currently pending the launch its new version 4.0.[5] El-Recetario.net is a repository of open content, consisting of "recipes" for the construction of objects, furniture, spaces and systems using discarded materials. Each recipe contains the step-by-step assembly instructions, where the materials and tools used are detailed as well as the knowledge and techniques necessary for the construction.[6]

1.4. The Experiences of Social Cooperation

Fablab Madrid CEU has focused much of its efforts in recent years on the development of social needs solutions via projects by Architecture and Engineering students of the Polytechnic School, such as the development of an incubator by a graduate student who is currently in a Benin maternity hospital; the furniture designed and manufactured by students of Architecture for the University of Makeni in Sierra Leone; or the hand prosthesis made using low-cost 3D printers, a project of students and teachers of the same university.

We would like to highlight the incubator project of Alejandro Escario (Telecommunication Engineer, Computer Engineer, with a Masters degree in Biomedical Engineering). This project was developed in the framework of a Fab Academy program taught by Fablab Madrid CEU in collaboration with the Center for Bits and Atoms at MIT (2014-15 course), which manufactured the first prototype of a low-cost incubator for developing countries. The project was awarded Best Medical Project by Global Awards 2015 and awarded by the Fab Fab Foundation, which allowed Escario to present the project at the International Congress of Medicine X held every year at Stanford University. Its main advantage is its low cost. While the price of a normal incubator ranges between $6,000 and $60,000 - depending on the features it has - this incubator costs less than $300. Its cost in Africa would be even lower, as the price of wood is much higher in Europe than in Africa. Another interesting point of this prototype is that it is easily repairable, a feature that solves a current problem that exists when medical supplies are donated to developing countries, and become obsolete when, because of some technical problem, the device stops working and does not have the ability to be repaired.[7] At present, there is already a second version of the design that will be sent to the Hospital of Magbenteh (Sierra Leone).

Another project to emphasise is the work done in Rwanda: the Kigali Chair Project, coordinated by the young Catalan designers Clara Romany and Josep Mora (fig.4). Having clear objectives, they were planted in Kigali, the Rwandan capital, and collaborated with Gatagara, a huge rehabilitation center with more than 1,300 children. According to government data, in 2002, of the more than eight million Rwandans, 2.4% of the population, 192.700 people are physically disabled. Romany and Mora realised it was possible that materials discarded by factories could be used to manufacture ecological and recycled wheels at a very affordable price. But the most important aspect of the project is not to provide wheelchairs; the benefit of the Kigali Chair Project is the teaching of how to make the wheelchairs and to demonstrate that creativity is possible with recycled materials. And under this premise, they created a manual with basic construction instructions.[8] In addition, while the project was being carried out, both Mora and Romany presented it to the Faculty of Architecture to encourage them to continue this path, promoting greater independence and self-management. It should be noted that its creators funded the project and related travels using their personal savings. In 2015, Romany and Mora won the first Catalan Ecodesign Award granted by the Department of Territory and Sustainability of the Generalitat of Catalonia . The reasons given by the jury are "the sensitivity and awareness of their actions towards eco-design with reuse of common elements available locally and using simple manufacturing processes, for the great social value of the proposal and because it could easily be applied to other developing countries". Currently, Mora and Romany are continuing with other projects, hoping to one day get the necessary funding to take their recycled wheelchairs elsewhere and to keep the charity project rolling.

2. Conclusions: The Spanish Design contributions to the Open Design

The open and collaborative practices of the network using free software can promote the inspiration to design new models of cultural institutions that allow experimentation with new forms of collective action. These are laboratories for citizens who can join with others to launch projects and are open to participation by anyone, and in which what is important is the end result of the experiment and the learning that occurs among participants while trying to coordinate themselves and to carry out the project. Ricardo Antón (2013) focuses that future around the Basque experience, which could extend to the rest of Spain from the perspective of Open Design[9]:

- To leap into the open and not keep clinging to closed patents when there is very little to gain. Designers have to go from a model change to one that is common, free and open.
- Also, to bet on the future, from design to the development of much needed new business models and thus be participants in the emergence of this new P2P paradigm.



Figure 1. Smart Citizen Kit, design and develpment



Figure 2. Builders Chair, of Made in My City

- To see the importance of internationalizing and distributing the creation, design, production knowledge and its value through virtual repositories for common use; while material production and consumption are rooted and adapted to local practices and markets.

- And as we have seen, we need places to co-design, where we can train to devise, adapt and document open practices from the encounters and conversations, hybridisation and remixing, learning and sharing knowledge, prototyping, of trial and error ... and trying to transcend the spaces themselves, as said in the study by Saez Garcia (Garcia Saez, 2016), to continue to subtly transform the world in a distributed manner. Thus, designers can discover and learn more about the future, and participate in its creation.

In reality, and as already noted in the publication Reset Design, one of the three paths of the emerging design profession is that which is informed by the culture of the Open Design code . Open Design is the latest collaboration tool that is moving from experimentation to reality, with its business format . The result of this reality is its triggering a community network that shares digital information of physical products. Closely linked to open coding, forms of shared design (which can be defined as Peer Design) appear. All the different aspects are in connection with industry 4.0 and Peer Production[10], as we have ubiquitous availability of production tools. In many cases this culminates in a complete process, including the production, as well as being a producer or a designer. It is at this time when the Open Design model gathers the interest and participation of a sufficient number of agents that it becomes unstoppable.[11]

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How much can you see? Students improving their observational skills in design foundations

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ABSTRACT

"It is not she [beauty] that is lacking to our eyes, but our eyes which fail to perceive her." — Auguste Rodin

The development of aesthetic sensibilities in Design takes years, and an attention to visual detail constitutes the fine grain of Design, with creative, technical, and analytic skills. In design foundations, nurturing detail-oriented observational skills can be a challenge. Most students are accustomed to a 'default observation'— "looking without seeing." This habitual observation, deriving from daily experience, can blind students to the depth and complexity of images, hampering them from developing the aesthetic sensibilities necessary to a successful designer.

This paper introduces an experimental project in which students were asked to 'break the frame' of their daily habits of observation, to explore details that are beyond their default attention. Students were put into situations where default perceptions and judgments wouldn't work, and cognitive refinement and focus were implemented. For example, students engaged in a process of creating a microscopic scene or mini-3D object in photo-realistic detail. The goal was to develop a detail-driven observational skill that is not only beneficial to design learning, but also a catalyst for creativity, analytic, and technical practices.

This paper describes and defines the notion of 'default perception or cognition' in contemporary graphic/information design, and proposes a series of concrete pedagogical exercises, appropriate to classroom contexts, to instill and refine a design sensibility commensurate with the complexities of our field.

Keywords
design, observation, successes and errors

INTRODUCTION

Attention to detail matters, for the simple reasons that it solves problems, increases efficiencies, and keeps costs in line. Besides engineering, medical and other detail-centric fields, it has been rigorously implemented on the creative side as well. German architect Ludwig Mies van der Rohe (1886-1969) is well known not only for his "Less is more" that set the modern design ethic, but also for his aphorism "God lies in the details" (Frascari 1983: 498) that shaped the modern design attitude and manner in the architecture community. Many modern landmark architectures such as the Federal Center in Chicago have fully conquered the audience by exhibiting the striking details. As much as in the architecture, details indicate the process of importance in the graphic design area as well. Embedded in the fabric of graphic design, details define the professional quality. Richard Holland, the founder of the Co: lab, a successful Hartford based design studio, suggested the young design students in Connecticut to pay a close attention to graphic details by sharing a story about how one of his senior designers spent a full work day, pursuing a perfect optical consistency in a line of fine print on a small business card design. Moreover, the senior editor and brand steward Bryn Mooth (2002) of HOW magazine, a leading graphic design periodical in the US, wrote an inspiring article in the magazine about a young graphic designer' sensitivity to material and attention to details helped him score the job of his dreams and won the HOW's Best of Show (p. 53). Attention to detail is, as we can see its value acknowledged in the design profession and print media, an important critical skill. Despite its demanding of years of professional practices (Mooth 2002), attention to detail is of great importance in the graphic design industry, and is an important element in academic design learning.

When it comes to art and design foundation studies, forging in students the ability to perceive visual details, "chew through" images, and attend typography on a micro level, is an indispensable component. For design educators, this is often however, a big challenge. When viewing a slide show in a classroom setting, or researching some visual samples on their own, many design students during the early part of study are accustomed to a default observation – 'looking without seeing.' Students often miss, or simply don't see, the minute details that embody and demonstrate the visual sophistication and the aesthetic architecture of a graphic design work. This default or habitual observation suits well in our comfort zone and works perfectly for our daily life, yet stands like a mountain between students and design expertise, hampering students from developing the aesthetic sensibilities necessary to becoming a successful designer.

1. Default Observation and Perception to Visual Details

The default or habitual observation in this paper refers to the ordinary manner of looking around in the context of every day life. This type of observation is passive and neglectful even though people may never feel that way. If it is true, then why our eye does that? Scientists and scholars have probed into the related areas, answering this question from different perspectives. The “selective visual attention” (Fries, Reynolds, Rorie, and Desimone 2001) in the area of neuroscience, and the “cognitive load” research (Clark 2008) in cognition study, suggested that our visual attention was selective, and biased to stimuli. This bias reduced the working memory (cognitive load) for the brain to remain responsive to more prioritised activities, or more relevant stimuli. Interestingly, in The Intelligent Eye, Harvard University professor and cognitive scholar David Perkins (1994) suggested that the neglect of our default observation was a result of what he referred to as “experiential intelligence”, an intelligent functioning that manages the ordinary life experience such as watching TV or driving cars. Our default observation, according to David, was fuzzy, rough and neglectful. The research conducted by David perhaps better interprets the default observation more relevant to the discussion here. He said: “experiential intelligence helps us to see what’s there, often we see much less than there is to be seen” (p. 16). Arthur Efland (2002), Art Education Professor at Ohio State University, agreed with David when discussing the observational activity to artworks in his book Art and Cognition. Efland noted: “Details may be found that would have gone unnoticed when ordinary habits of cursory scanning prevailed” (p. 17).

Additional research and discussion in this topic can also be found in other disciplines such as philosophy (Goodman 1984) and psychology (Metzger 2006). Regardless the grounds of various studies and interpretations, our default observation tends to ignore details indeed. Yet how could these seasoned designers and practitioners be immune to their ordinary observational habits? If they were able to see more details than the student beginners, they must have developed a special eye. According to Efland, what people see is largely based on the expectations formed in the prior knowledge (p. 17), we can draw the clue that the seasoned designers saw images in a much deeper level because they had accumulated the “prior [design] knowledge” through their creative career. This “knowledge” helped the designers develop the eyes of experts to see more details than those with less experience (Clark 2008: 12), and make better decisions in fine-tuning their design works in details to perfection. In the academic foundation design study, ordinary life experience, personal interest, social context etc. did not provide students the necessary “knowledge” to develop such a precious observational skill. The default observation therefore prevailed when the students’ expectation for visual details had never been activated.

The objective of this experimental project was to stretch students’ attention to visual details, and to activate their expectation to perceive the details at a deeper level. “Prior [design] knowledge” was precious for the seasoned designers since such knowledge took years of design practice to accumulate. This two-week long project was however, not meant to replace, nor to diminish the value of the “prior [design] knowledge”, but to remind students of the importance of the detail-driven observation in design learning, and to encourage them to actively employ this type of observation during their foundation studies.

2. Process Overview of The Experimental Project

The experimental project was implemented in two 3D imaging studio classes with about 15 students in each class. Autodesk Maya was the primary tool in the class for rendering photo-realistic images. Students participated in a series of tasks designed to ‘break the frame’ of their daily observation, exploring the details that are beyond their habitual default attention.

2.1 (Task 1): Seeing with a Default Observation

In a studio, students were given a photograph of a typography-driven coffee package design. The project started with a task asking students to write down what they saw in the photograph displayed on an overhead through a Doc Camera as they were referencing a design sample on their own (Figure 1). Students then summarised their findings and formatted the result with bullet points in a Microsoft Word document. Without being given any implicit instruction, students proceeded with their ordinary observation habits. For a 15 student class, it took about 20 minutes for every student to complete the task.



Figure 1. Students proceeded with their default, ordinary observation habits, writing down what they saw in the displayed photograph (left) as a design sample.

2.2 (Task 2): Breaking students the frame of habitual observation

This session started with students receiving an instruction form from the professor. On the form, a list of tasks was provided for students to implement, challenging their default or ordinary observation habits. Following the instruction, students imported the photo copy of this typographic coffee package into Adobe Illustrator or Photoshop using the default measuring units commonly for graphic design practices in the US (ex. inch for space and point for font size). Students worked individually, carefully observing, measuring, and estimating (if they had to) the height and width of the package, positive and negative spaces, font sizes, cases, weights, gestures, alignments, textures, color variations, and materials. (Figure 2). Students were encouraged to add any extra details they believed relevant to their graphic design practices. Finally, students summarised the result and categorised it with bullet points in Word documents. This task took between 2 to 3 hours (Our studio is in a 3-hour class setting).

At the end of task, students posted their documents together on the soft-board in a studio classroom. The document on the left showed the result of their default observation, and the document(s) on the right listed what they found through the instructed, detail-driven observation. The items that appeared on both documents were shaded with a color, for a quick overview of the differences between the two types of observations.



Figure 2. Students were conducting an active observation through the instructed tasks.

2.3 (Task 3): Analyzing Attribute Details for Rendering a 3D Image.

Task 3 was to render a photo-realistic image in Autodesk Maya based on the given photographs. Students had to pay close attention to the shape and proportion of the package in the photographs for modeling purposes. Students were also required to simulate the lighting environment and the paper materials on the package in the photographs. Some “cosmetic features” on the package such as paper wrinkles as well as wears and tears should also be simulated in their renders. This took about two weeks to complete.

3. Evaluating Success and Errors

3.1 Success

This experimental project was successful in a number of ways. Where there is no comparison, there is no judgement. The most meaningful and inspiring part was the presentation showing the perceptual differences between the two types of observations. By comparing the data listed on the Word documents side by side, students were now fully convinced their default observation was neglectful. Without much of class discussion, they immediately recognised how many details became faint and even invisible in a passive way of looking (Figure 3). Students now clearly understood that the reason their school work lacked of the professional sophistication was largely due to the fact that they either missed the important visual details in their work, or left the details never fine-tuned. Perceptual habits can be modified if and when these habits are found limiting (Efland 2002: 17), this comparison and class discussion therefore should well raise the students’ awareness of noticing visual details, and on a certain level, activate students’ expectation to attend visual details in their future design observations.

In our point of view, this project was not just a wake-up call, but also a positive catalyst. Closely observing the details of artworks has been approved effective at Harvard Medical and Dental School, to help students build the expertise in medical inspection (Naghshineh, Hafler, Miller, Blanco, Lipstiz, Dubroff, Khoshbin, Katz 2008). A similar task was also experimented by a team of lecturers and scientists at the Nursing School at Yale University



Figure 3. Students were discussing the perceptual differences between the two types of observations.

in New Haven (Pellico, Friedlaender, Fennie 2009). Like the cases above, this active, detail-oriented observation training in our design school expedited students developing their design expertise as well. Academic design foundation is not just a curriculum of basic design principles, but also a learning period in which visual referencing is intensively involved. Design students often spent a considerable amount of time after school conducting visual research on their own, finding well rounded design samples for inspirations, and exercising based on these samples. After this observation training, students caught significantly more details than before, and these who attended the visual details on the samples were more likely to re-interpret, and utilise these details into their own design practices. It was an imitation-based, but healthy learning experience, in which students benefited from experimenting different visual solutions in details out of professional works, including layouts, spacing, image styling, typographic treatments and color schemes. When this detail-driven self practice began to accumulate, students will, in a timely fashion, develop their design expertise and find their own creative voices, much sooner than these still lingering at their comfort zone with a passive observation habit.

Task 3 was a manual practice (using computers) that engaged students in a process of creating a digital 3D package showing photo realistic details. It further enhanced the idea to students that attention to details leads to a greater visual success. Through this computer practice, students understood a striking photo-realistic quality does not come from a cursory observation plus a quick, automatic software maneuver, but from fine-tuning every micro detail analytically and creatively. Following the software interface, students analyzed and actively adjusted a list of lighting and material attributes, most of which are often either overlooked, or almost invisible in our ordinary life experience, such as material type, transparency, bump, diffusion, light intensity, decay rate, drop off, global illumination, final gathering etc. Students had to refine their perception and focus on the details to a much greater level, in order to render the image convincingly realistic and visually stunning to viewers.

3.2 Errors

This experimental project was generally smooth. Still, errors occurred.

When students compared the results between the two different types of observations, they noticed the data measured from the detail-driven observation was significantly different among students themselves, even for the same design element in the package photograph. For example, due to the different scan preference settings, images resolutions, image crops, and other factors, students measured the display typography (Coffee Break on the label) showing different type sizes. Students from both classes wondered if this data disparity suggested the inaccuracy of details. Students preferred a ready-made, active digital file in Adobe Photoshop for receiving a consistent result across the class, instead of physically scanning the package photograph through scanners, resulting in inconsistent measurements.

Certainly, a consistent data result might have made this experiment less confusing to the students. And as a matter fact, so much focusing on the shift between the two different observations, we did not see this issue. This unexpected error was not part of the drill in this experimental project. Yet interestingly enough, this error opened up another inspiring conversation about the concept of “relational observation”. It is not the term used in phycology but the one in the fine arts regarding observational drawing or painting. Amiria Robinson (2015), a New Zealand based artist and teacher, suggested students “must get used to seeing things not in terms of absolute scale, but in terms of how one thing compares to another”. In graphic design, visual details are not isolated either, instead, they are related to each other as well. Whether they are visible or invisible, perceivable or inaccessible, they are organically associated and nested in an enclosed frame of design work, following a certain hierarchy. In design foundation study, we encourage students to attend visual details. On another end however, having students understand the visual relation and hierarchy among details will allow students to better see the image as a structured whole, or as “a big picture” (Timothy Samara 2004: 14-15). After all, over focusing on details without realizing the internal relation may result in seeing the “wood” without seeing the “trees” (Hyndman 2016: 32), which prevents students from perceiving another important design principle: the visual integrity (or unity) of a design work.

In task 3, more errors occurred frequently from modeling to final rendering. Most of errors made in this part by students were due to the technical failures. But one of students brought an interesting rendering as an accident. The rendered image seemed against laws of nature due to the errors in the settings of the final gathering in Maya. But still, it was visually impressive. When everyone was showing their final work on the school computer screens, this mistake reminded students the potentials of the 3D Maya program beyond its photo-realistic rendering capacity. For a number of years, Maya has been experimented for none photo-realistic rendering (NPR). Despite the fact that the photo realism has been the driving force of the computer graphics for several decades (Gooch Bruce and Gooch Amy, 2001: 1), engineers, scientists and artists are still fascinated by the Autodesk Maya, making computer generated images ranging from rigorous prototypes to extremely abstract expressionism paintings.

4. Conclusion

There is always much more in a photograph, or an image, than one can ever see, as the Italian philosopher Giorgio Agamben reminds us. And there is also much more that is ‘invisible’ in our contemporary media than a mere interval or referent; whatever contiguities and contingencies that may have defined an image, a design, or an event are evacuated in the enflaming ‘cut’ - they are elsewhere, absent and inaccessible, replaced by habitual conventions of looking, reading, consumption, and interpretation that are in themselves schematic and contingent, and which represent interests and biases that define a present image through its necessarily absent referent. For those who work in the field(s) of graphic and information design, these complexities are a part of daily life, and our capacity to perceive, read, interpret, translate, explain—and make— images and designs is integral to our effectiveness in the field. Through this research and experimental project, it is our hope that students can step out of their comfort zone, and forge themselves a productive observation skill that helps students grow and sets them apart in the future design market.

An Annotational Afterword

Computational models in medicine, in conjunction with technical methods such as fMRI, sonograms, and high-definition composite CAT-scans, produce data through which extremely accurate models of organs (hearts, lungs, etc) or systems (vascular, nervous) can be ‘seen’ anew, in a way that corresponds to our thesis. In a similar manner the imaginative exercises in ‘ways of seeing’ that occur in CGI, sfx, and other forms of computer-assisted design, whether it is for a practical, social, or architectural application, or for artistic and phantasmatic entertainments, movie creatures and environments, are also related. The patterned regularities of taxonomic or classificatory forms are both principles of organizing data, and also data in themselves. With various forms of technical intervention into visual perception we can ‘break the frame’ of our complacent presumptions and expectations in order to see something in a fresh, new, way. Often one has to unlearn habitual modes of perception—but not jettison them entirely—in order to break these conventions and apprehend images, configurations, and relations in a deeper and more complex fashion. The notion of technischen-bild, or technical image, as it is used in the context of German history and philosophy of science, has a very practical dimension: it is an image, a picture, or a graphic representation of quantitative or abstract data that serves not only as mere illustration, but also produces a form of knowledge in itself. The rudimentary ‘tinker-toy’ models that we all grew up with in chemistry are just such a model, a schematic device that both aids us in the visual comprehension of complex system, but also allows us to manipulate that system, and therefore to do things, and to produce knowledge, which is both innovative and novel. These manipulations, which also have the merit of being abstract or concrete, material or virtual, are a pragmatic involvement in the exercise of practical reasoning. As such they render salient the balance between the aesthetic and the necessary. The conceptual leap beyond habitual ways of seeing (and thinking) is a crucial element in creative thinking in the arts and humanities, and is perhaps especially true in graphic design, a field which incessantly interacts with, and forms complex relations to, a wide variety of diverse disciplines and practices.

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Emojis - an open and universal means of communication?

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ABSTRACT

Emojis are fast evolving as a new means of graphical communication, independent of languages, geographies and political boundaries. Taking this idea further, the authors explore if such a graphical system could be used as an alternative 'universal' means of communication among people whose native languages are different. The underlying need for conducting such studies was that there exist communication difficulties between people who do not speak a common language. Typically such situations arise when people are travelling in a foreign country. The experiment was conducted with participants of varied profiles (age, gender, occupation, ethnicity/ cultural background). Using brainstorming sessions, surveys and questionnaires, broad 'context categories' were identified where communication difficulties arise due to language differences among communicators. For instance, places of food and entertainment, places of stay, transport and mobility. Within each 'context category', participants were given a set of one-liner statements in words. They were asked to code (represent) the statements using emojis. The resulting emoji statements from one participant were sent to another participant to decode (interpret) them. After a thorough analysis of the experiment results, key findings are presented in the paper. While emojis served well as a starting point to test the idea, they are not alone sufficient to fulfil the purpose. An additional set of icons need to be developed along with a rule system for their usage. The findings of this experiment are planned for use by the authors, to design a graphical kit as an 'open' and 'universal' means of communication.

Keywords

emojis as an emerging language, universal and open means of communication, graphical communication

INTRODUCTION

This paper describes an experiment to test if a universal common means of graphical communication could be created and adapted world over. The underlying need for conducting such studies was that there exist communication difficulties between people who do not speak a common language. Typically such situations arise when people travel to a foreign country. The authors observed trending usage of emojis in various social media independent of languages, geographies and political boundaries (International Business Times UK, 2015). They observed that such graphical communication was rapidly evolving naturally and being adopted all around the world to express emotions, gestures and situations. Taking this idea further, the authors conducted an experiment to check if such graphical language can help to solve communication problems in travel-related contexts.

Brief History of Graphical Communication

To start with, the authors looked at the evolution of graphical communication. The first pictorial signs appeared in 30,000 BC, in the form of cave paintings (noupe, 2015). The Mesopotamian language of cuneiform, Egyptian hieroglyphs, Japanese pictograms and Mayan glyphs are major milestones in graphical communication. Hieroglyphs used by the ancient Egyptians show the existence of graphical communication dating back to 3300BC (History-world.org, 2016). The last century saw emergence of iconic pictogram systems such as the one used at Olympic Summer Games in Tokyo 1964 and the system by United States Department of Transportation (DOT) in the year 1974 (Anona, 2016). In the 1990s, usage of emoticons was popularised by the Japanese in personal communication using pagers and mobile phones. Around this time (1998-1999), Shigetaka Kurita developed the first set of emojis for NTT Docomo's i-model mobile internet platform.

Trending Usage of Emojis

Several sources have been spotted by the authors where emojis have been trending in the world of graphical communication. Oxford Dictionary's "Word of the Year" for 2015 was a pictograph - "the Face with Tears of Joy" emoji (OxfordWords blog, 2015). Leading media sources such as BBC and Wired Magazine have reported the impact that emojis are having on the society. Popular linguist Neil Cohn writes a critical analysis on whether emojis have potential to become a language (Cohn, 2016). Online magazine 'Wired' also reports a similar phenomenon if emojis are only a trendy slang or can become a whole new language (WIRED, 2016). Recently, emojis have been used in art. The work of artist Carla Gannis ("Garden of Emoji Delights") is reinterpreting classic artworks and fusing them with emojis (Medium,2015). The usage of emojis was also observed in advertisements. For example, 'Pepsimoji' designed and used by Pepsico in advertisements in 2016 (Anonb, 2016). Emojis were used in campaigns such as the Earthmoji placards used at people's climate March in London for pro-environmental protest in 2016 (Pentagram.com, 2016). Emojis have been creatively used in poems by poets like Stefanie Berger and Carina Finn (Poetry Foundation, 2016). The company 'Emogi' released their emoji report in 2015 which states that ninety two percent of online consumers use emojis (Adweek.com, 2016). Most emoji sets in software applications at the time of this writing (WhatsApp messenger application, Google Mail, Yahoo email application, Facebook, Twitter etc.,) have a huge library of facial expressions, gestures, people, nature, signs, symbols, places, objects etc.,. These emoji sets therefore serve as a 'readily available' tool for testing one-to-one as well as mass communication.

The Emoji Communication Experiment

Objective and Scope of the Experiment

The focus of the experiment was to study if and how emojis can be used when native languages of the communicators are different. Hence the main criterion for the experiment was to have lingual diversity among participants. The study was directed by setting the context of situations faced by travellers and tourists.

The study was done for one-to-one communication using emojis on WhatsApp messenger application (readily available as a tool for testing). Research showed that WhatsApp was the most popular and commonly used application worldwide at the time of this writing (Most popular global messenger apps, Statista website). Another reason for using WhatsApp was that the emoji appearances/ renderings on WhatsApp are consistent across platforms (Apple, Facebook, Google, HTC, etc.,). For other mobile applications, emoji renderings are different across platforms and these differences in renderings; pose communication challenges (Miller et al., 2016).

Preliminary Survey and Trial Run

As described above, the focus of the study was on communication problems faced during travel in particular because of differences in languages of natives and travellers/ tourists. Based on personal travel experiences, the authors brainstormed to identify possible areas where communication difficulties occurred due to language differences among communicators. Broad 'context categories' were identified such as places of food and entertainment - restaurants & cafes, places of stay – hotels, youth hostels, apartments, contexts of transport & mobility – booking, navigation and manoeuvring, medical activities – doctor, dentist, pharmacy , places of shopping – supermarket, malls, bakeries etc., With these context categories as a guideline, an open-ended questionnaire was sent to a set of participants (ten people). The people chosen were of different nationalities, ages, genders and had varied exposure travelling to different parts of the world. They were asked to describe communication difficulties faced (if any) because of language differences. The results were analysed to spot specific areas of difficulties and most frequently occurring situations. Few instances of difficulties told by participants were expressions like "food with no-meat", "allergic to eggs", dental "root canal treatment" etc. It was found that quite often people made drawings to illustrate their ideas to the other person.

To test if communication in above mentioned contexts can alternatively be done using emojis, a trial-run was conducted as follows. Based on findings above, a set of one-liner statements were framed under each context category. These statements comprised of only three to five words. For example in the context of food places, one-liners were "no meat please", "tea with milk" etc. A sample set of participants (no specific criteria) were asked to represent these one-liner statements using emojis. The resulting emoji-coded statements were studied to understand how participants represent worded statements using emojis. This trial-run helped to develop an elaborate plan for the main experiment (next section).

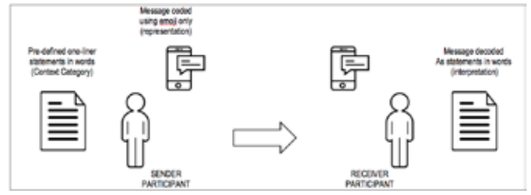


Figure 1. Process used in Emoji Communication Experiment

Process of the Experiment

Figure 1 shows a visualisation of the process followed during the experiment. One set of participants was given a set of pre-defined one-liner statements in words (similar to the trial run mentioned above). They were asked to code (represent) the statements using emojis. The resulting emoji statements were sent to another set of participants to decode (interpret).

In this experiment, a total of eighteen people participated. Their profiles differed in age, gender, occupation, nationality and lingual background (see table 2). Ten of these participants were presented with pre-defined one-liner statements under each context category. They coded the one-liner statements in form of emojis (as explained in trial-run above). The resulting emoji statements were decoded by remaining eight people. Of the ten participants who coded the statements using emojis, three people also decoded emoji messages from others.

Ages	15-25 years (5), 25-35 years (4), 35-45 years(6), 45-55 years(2)
Genders	Males (7), females (12)
Nationalities (7)	Indian (11), Africans (2), Chilean (1), Polish (1), American - USA (1), Swiss (1), Russian (1)

Table 1. Participant profile mix in the experiment (number of people mentioned in braces)

Sample occurrences from the experiment are presented in table 3. For purpose of demonstration, only one set of decoded statements from a participant have been shown for a particular set of

encoded statements by another participant. However, in actual, several participants decoded the same encoded emoji statement set. That means there was a one-to-many relation of encoded statements to decoded statements. The interpretations of various recipient participants did vary in most cases.

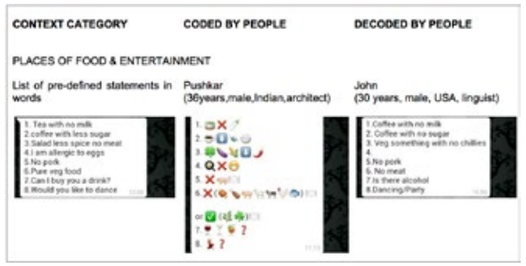


Table 2. Sample occurrence from the experiment

Observations and inferences from the experiment

From the experiment results, occurrences of situations were noted down under each context category. After studying the frequency pattern of occurrences and interviewing participants, following inferences can be drawn from the experiment.

- In the pre-defined one-liner statements given to the participants, for many items, explicit emojis were not available. Hence many additional icons are needed.
- Emoji usage was context-sensitive. When an explicit emoji was not available, people used other emoji creatively to express the same idea. For e.g. sugar was represented by candy and ice-cream (they contain sugar). Alternatively, participants represented such items using ‘similar looking’ emoji. For e.g. a rice bowl looking similar to sugar was used to represent sugar. Such context-sensitive usage is open to different interpretations by people.
- Comparisons and relative contexts such as less/ more, high/ low, up/down etc were represented differently by people. For e.g. less was represented by ‘down-arrow’ key by few and by using ‘minus’ sign by others.
- Commonly used questions need to be standardised graphically (where? when? what? which? who? how?).
- Conditional statements were found to be tricky and difficult to represent (e.g. salad with less spice and no meat). A commonly understood syntax (similar to computer languages) with sequence, grouping, conditions and hierarchy needs to developed.
- Usage of gestures and expressions need to be defined for two reasons. Main reason being the same gesture can have different meanings in different culture. The second reason being within the same culture, there are multiple meanings with same gesture emoji. E.g. a raised hand denotes ‘I need something’. It can also denote ‘a high-five’. Similarly prayer hands can denote ‘thank-you’ or ‘welcome’ depending on context.
- Certain standards could be established for navigation, directions and location. People found it very difficult to code ‘asking for a particular direction and location to a place’ (e.g. main entrance to a metro station).
- For many conditions such as allergy and anaesthesia, partici pants failed to represent the condition because of complexity and unavailability of appropriate emojis in WhatsApp. Such conditions need explicit icons/ emojis.
- Familiarity with emoji usage was vital in communication. Younger participants were able to code and decode statements much more quickly and effectively. They were more familiar with emoji usage on WhatsApp than the elder participants.
- It was observed that most participants were amused by the experience. They reported that they already use combination of emojis in their regular conversations on WhatsApp messenger to express situations in a short manner creatively. Therefore from acceptance point of view, a good level of interest/ keenness was shown by participants.

Conclusion

In this experiment, emojis were used to check if and how graphical communication might aid in contexts where native languages of communicators was different. Much of the inferences have been listed in section above. It is clear that the current set of emojis (in this case from WhatsApp messenger) does not suffice the intended purpose. It only shows a promising direction. A larger library of icons is needed to tackle the contexts pointed out in this paper. Having a rich library of icons will also serve the purpose only partially. To complete the system, a syntax (similar to computer languages) with sequence, conditions, grouping and hierarchy also needs to developed.

In order to have a universal acceptance and interpretation of icons/ emojis, the meanings of emojis and icons and their usage need to be well-defined and established. Denotation-Connotation relationships need to be well-established. Familiarity of the system would be needed for people to use it. For this purpose, a basic learning chart (similar to traffic signs) needs to be provided. Several participants of the study also said that a chart explaining the meaning of emojis would be handy.

While emoji are not evolved to become a language, they can certainly become a way to express short statements in the form of a ‘lingo’ when aided with icons (non-emoji) taken from other sources. Establishing an open standard like this will help people across the world to overcome basic communication barriers especially while on travel.

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Coping with contingency

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ABSTRACT

In Schön's account, contingency is encountered in the essential reflective dialogue with the design situation, in move-making, reflection and move-making again. Design moves are concrete, yet also speculative in that their outcome cannot be fully ascertained a priori. Once performed, we may be in a position to judge whether the outcome is aligned with our intentions, or whether something rather different was produced. Unexpected results can be revealing and inspiring, or close down exploration, shutting off further lines of inquiry. Designers may operate in a loose, experimental manner and by definition outcomes will have a greater degree of unexpectedness. Importantly, however, the designer does not intend for a specific outcome, but rather intends for experimentation, guided only by loose framing. Unexpected results cannot be considered a mistake or error under these conditions because that is precisely what is intended. We seek to diminish the event and significance of 'mistakes' and 'errors', and argue instead that experimental practice is to operate with a looser 'grip' on the design situation. We contrast this with non-experimental design practice and develop a phenomenologically-informed account of design practice.

Keywords
contingency

INTRODUCTION

The process of design is one of charting a course through uncertainty with a destination not fully disclosed in advance. In navigation and journeying, buffeted by natural forces and encountering strange materials and customs, we come to understand what would make for a good destination, what we need to create to carry us forward, and how we might know we've arrived. Designers are in constant negotiation with what is at stake in the situation, and in their proceedings actively shape the very constitution of the situation and what might be considered the 'problem'.

This is to say that design is always a process of uncertainty and always one of contingency. We may, for example, come to discover important aspects of the problem or design requirements well into the process, after it is thought we know enough. Accepting this, we seek ways of bounding contingency, establishing the conditions for contingencies of a kind, and ways of negotiating with the contingency we meet. Rather than stumble into traps of unexpectedness, designers seemingly plot to draw them out: using iterative processes of sketching and prototyping to confront misunderstanding or lack of understanding earlier in the process while there is still time to learn. Encountering unexpectedness under this condition is not a failure or error, but part of coming to terms with the design situation.

In this paper, we probe into uncertainty in design, drawing particularly from Donald A. Schön's widely-known account of the design process. We discuss contingency in relation to experimental design practice and tentatively suggest an alternative view on the design process which accounts for contingency.

Contingency

In Schön's account, contingency is encountered in the essential reflective dialogue with the design situation, in move-making, reflection and move-making again. Design moves are concrete, yet also speculative in that their outcome cannot be fully ascertained in advance. Once performed, we may be in a position to judge whether the outcome is aligned with our intentions, or whether something rather different was produced. Unexpected results can be revealing and inspiring, at times leading to what is colloquially known as 'happy accidents'. Unexpected outcomes might also seem to close down exploration, shutting off further lines of inquiry.

Designers may operate in a loose, experimental manner, in whole, or in part of their processes. By definition of experimental process, outcomes will be more unexpected. Importantly, the designer does not intend for a specific outcome, but rather intends for experimentation, guided only by loose framing. Unexpected results, which either opens or closes future possibility cannot be considered a mistake or error under these conditions because that is precisely what is intended. This suggests a nuanced relation between experimentation and error. It is wrong to conflate contingency with error, thus inferring that experimental processes are more error-prone. 'Error', in its dictionary definition, relates to abnormality, flaw, mistakes and holding of untrue beliefs. Expected unexpectedness would not seem to qualify.

What if a material unexpectedly fails or otherwise performs contrary to its expected qualities? Perhaps the designer works to shape wood into curves, and one particular piece of wood breaks at significantly shallower angle than other pieces. Is this an error? In a production process, it certainly could be considered an error; a faulty plank of wood duly replaced with another, more complaint plank. We must consider the intentions at work. If the designer was purposefully experimenting with the material limits of wood, the same event could hardly be considered an error. If, however, the designer was forming the plank within its typical material limits, the snapping is a deviation from the norm - an error.

Errors encountered as material flaws and failures may also hint at another form of error: the designer is operating with a mistaken or incomplete understanding of the material. Believing that wood can be bent at an acute angle and finding out that it snaps is an error on the part of the designer, reflecting inexperience. The cause of error does not lie with the wood, and using a replacement plank will not be of help. It may be constructive to briefly set aside pejorative notions such as 'error' and 'unexpectedness', especially as they seem ill-suited to experimental practice. An alternative framing is to draw on Merleau-Ponty's notion of situational 'grip'.

Coping

Our basic stance, in Merleau-Ponty's phenomenology, is one of a constant striving for 'maximal grip' or equilibrium with the situation. On an ongoing basis, we perceive imbalance, and are drawn to adjust our comportment in order to achieve balance, in what Dreyfus characterises as 'coping'. In this view, our basic engagement is of a pre-reflective, non-conceptual kind. For Dreyfus, we are at our best when we are skilfully or fluidly coping, geared-in to the flow of the situation without need for reflective thought to guide our action.

This is the kind of experience one gets when 'in the zone', such as skiing downhill, a feeling of oneness with your skiing equipment, the conditions, the slope, other skiers and so on. You feel like you've got a 'grip' on your situation, with your body responding just as the situation demands. It happens of course that we can also fall out of the 'zone', and seemingly find it difficult to keep up with our situation. We might misperceive the situation as calling for action which does not help to draw us into equilibrium. Or we may be unable to make the necessary nuanced action for fulfilling demands of the situation. We are skiing beyond our capabilities. We are unable then to fluidly cope, but rather must deliberate and recall knowledge in order to make up for the gap between the situation and our abilities of perception and action. Reflective turns, either intentionally questioning one's action or being forced to on account of malfunction or unexpectedness, upsets smooth coping.

Rules and mnemonics for how to ski may be useful at the novice level, but with practice, they soon slip from use. Following Merleau-Ponty, Dreyfus claims the development of skill, the ability to be a better skier and tackle steeper terrain in more varied conditions, is the development of bodily perceptual capabilities, not a matter of richer or deeper conceptual knowledge (Dreyfus & Dreyfus 1999). We are able to perceive the situation with greater nuance, and take action with greater nuance. If asked 'how did you ski down that hill?' we may well recall such rules - in a way of post-hoc explanation - but rules cannot authentically account for the journey.

Design as Coping

In Schön's account, smooth coping is described as 'knowing-in-action' (Schön 1987, p.22), following Ryle's notion of knowing-how. There are some parallels with between this account of design practice and those of Merleau-Ponty and Dreyfus. When the skilled practitioner reacts to variations which appear before them, this is the domain of knowing-in-action. If, however, the practitioner is surprised by an unexpected phenomena or error, Schön claims they may move to a reflective mode. Failure to do so amounts to 'brushing [the event] aside' (ibid, p.26). Reflection-in-action is a questioning of the situation - what led to it, and what course of action could be taken - which happens in the moment of activity, so there is a chance to weave the response into the situation. Reflection-on-action is of a similar critical turn, but it happens out of the flow of activity, perhaps for example while driving home, or in a project debriefing. While knowing-in-action happens without conscious deliberation, reflection is 'at least in some measure conscious' (Schön 1987, p.28).

The distinction between knowing-in-action and reflection-in-action do not seem clear. Schön acknowledges that surprise may appear as already interpreted, thus not requiring reflection, and that from an observer's perspective reflection-in-action might be invisible. Reflection-in-action is described as a thoughtful affair which happens to proceed concurrently with action, but at times it seems as though reflection-in-action is really a sort of non-reflective knowing-in-action. In his account of the design tutor Quist's skilled design practice:

'In his unfailing virtuosity, [Quist] gives no hint of detecting and correcting errors in his own performance. He zeroes in immediately on fundamental schemes and decisions which quickly acquire the status of commitments. He compresses and perhaps masks the process by which designers learn from iterations of moves which lead them to reappreciate, reinvent and redraw. But this may be because he has developed a very good understanding of and feeling for what he calls 'the problem of this problem.' […] Quist seems to have developed a feeling for the kind of conversation this design sets in motion. […] But Quist reflects very little on his own reflection-in-action, and it would be easy for a student or observer to miss the fundamental structure of inquiry which underlies his virtuoso performance' (Schön 1983, pp.125–126)

Schön insists there is a 'fundamental structure' to Quist's practice, yet it would seem that if Quist was operating according to Schönian reflection-in-action, he would be aware of it and be able to describe it as such. Rather, Quist 'reflects very little' (ibid. p126). An alternative account is that of fluid coping. Quist, a skilled designer working with a novice-level problem, is able to proceed without reflection. His action proceeds through his 'feeling' for the situation and its imbalances, and drawing on a repertoire of action without, or with very little cause for conscious reflection. What distinguishes the expert and the novice is not that the expert does more or better reflection, but they are able to perceive and make design moves with greater nuance than the novice.

In the phenomenological view of Merleau-Ponty and Dreyfus, situations are in continual flow, and we are never able to achieve complete equilibrium, only 'a better or worse grip on the situation. Such coping has satisfaction conditions but it does not have success conditions' (Dreyfus 2014, p.188 original emphasis). This understanding of our being is congruent with the nature of design: that of making moves, listening to the 'back talk' from the situation, aligning and imposing order (Papanek 1971) and 'satisificing' (as H. A. Simon coined it) rather than solving (Rittel & Webber 1973). According to Merleau-Ponty's notion of striving for maximal grip, our body is solicited to act by the demands of the situation. Similarly, Schön describes how the designer is called to act by their perception of the situation:

'Designers, it will be argued, are in transaction with a design situation; they respond to the demands and possibilities of a design situation, which, in turn, they help to create.' (Schön 1992)

Contrary to Schön's view that the constructive course of action when dealing with unexpected phenomena is reflection, it may well be such that designers can respond without deliberation, and remain open to being drawn along by the demands of the situation.

Conclusion

We could consider experimental design practice as one of operating with a looser 'grip' on the design situation. In this view, the designer is comfortable with slack, comfortable with a broader feeling of equilibrium with the design situation. Design moves may be looser, and the situation does not appear as being sharply out of equilibrium or in need for particular, precise action.

Designing with a loose grip is to allow for some 'slop' in how it proceeds. We grant the situation a degree of unexpectedness in terms of action and how the situation is perceived. When reacting to phenomena that occurs, we do not attempt to tighten the grip, to hew closely to equilibrium and close off further unexpectedness. We take it in stride, and in this way contingency becomes a resource rather than liability.

As in Schön's account, it may well be our knowing-how is disrupted by something which requires conscious deliberation. In this case, the event would be entirely beyond what we thought it were possible to encounter, a form of breakdown in our engagement with the situation. In reflecting on the situation, we might find the outcome, while unexpected, is agreeable or promising, and thus proceed to better understand the phenomena or further express it. We might just as easily find nothing of significance, judging it to be a freak occurrence or something to avoid. Unexpected outcomes, whatever their source, can be constructive as concrete manifestations of another way we didn't anticipate. They surface the limits of our understanding, because we didn't know enough to avoid the outcome, or perhaps because we don't know enough to explain the outcome. When the designer sets out on an experimental design process, unexpectedness is in fact expected. In this setting, what constitutes unexpectedness or error is thus rather differently circumscribed.

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A study of konglish: open for subjectivity as a comprehensive framework to approach error and mistake in the practice of design experimentation

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ABSTRACT

In the field of Graphic design and typography, errors and mistakes are crucial to the practice of design experimentation. However, It is difficult for novice designers to fully grasp on errors/mistakes in experimental process because of the ambiguity of errors and mistakes; which is often considered as perplexing and risk-taking. Nevertheless, errors or mistakes in the field of Graphic design and typography can also be used to create opportunities for experimentation and exploration because the term 'ambiguity' itself has no absolute meaning. This way, designers are able to use their own subjectivity as an approach to create openess to design. Hence, it is essential for designers to allow themselves to interpret errors /mistakes from their subjective point of view. This paper experimented on typographical errors or mistakes and came up with a type called 'Konglish'. Konglish is an experimental typography derived from using Korean alphabets rearranged legibly for English speakers for easy reading and understanding. It was inspired by Typo (typographical mistakes) created by Twitter users as a new typographic norm. By reflecting on the process of experimental 'Konglish', this paper explored how designers can interchange their subjectivity and mistakes/errors during the experimental process.

Keywords

experimental typography. subjectivity, error/mistakes

INTRODUCTION

Simple errors and mistakes create an opening for design opportunity and exploration. It often leads to unexpectedly pleasant aesthetics or new ideas. According to Renny Gleeson (2012), any error can create an opportunity to build a good design moment. Bestley and Noble(2016), also stated that making a mistake will create many positive aspects on design experimentation. This will help to achieve a formal critical reflection by analysing the process of design experimentation to innovative and critical design thinking. Even though, it is considered as a critical factor of the design experimentation, errors/mistakes can be perplexing and ambiguous concept because they often emerge from uncontrolled and unintentional conditions from the designer and experimental process. Hence, the challenge arises as many novice designers often find errors/mistakes difficult to avoid during the experimentation process. This paper will propose subjectivity as a methodological approach to this challenge. An experimental typography, Konglish was inspired by the Twitter users' open approach to typographical mistakes and errors to create a new linguistic and typographic norm on social media platforms. By reflecting back to the process of Konglish experimentation, this paper will explain how designers can interplay their subjectivity, mistakes and errors during the experimental design process.

Subjectivity and Experimental Design

According to Crow (2004), many semioticians believe that meaning is created through an individual's subjective experiences and perception which is embbed in the sign. Nordtug (2004), coined the term subjectivity as a mode to understand these subjective experiences and perceptions through our language. By this he meant that, an individual's subjectivity is often reflected on text and subjectivity can be understood through presentation of text. Charles Peirce Sander (1994), introduced semiosis as a transfer of meaning produced between a dynamic process of signs, the reader of the sign. Deledalle (2001), explained further that, 'Peirce's understanding of sign can be regarded as an empty holder of the meaning that relies on the reference to the interpreter and individual's knowledge and experiences. This means it cannot be fixed because its subjective. Fallan and Less-Maffei (2015), postulated that, design is subjective because it was developed through designer's personal experiences and perception. According to Bil'ak (2005), experimental design is a subjective exploration process not expecting a pre-conceived idea of an outcome. An experimental typography is characterised by anti-conventional and self-expression which is often established through taking a

risk (Triggs,2003). By taking a risk, a designer is unaware of the result of experimentation which often leads to novelty. Novelty allows designers to create their own interpretation from their own subjectivity. Hence this explains why errors/mistakes can often produce unique experimental designs as well as evidently showing that subjectivity is crucial to experimentation.

The Story of Experimental Typography, 'Konglish'

Konglish is an experimental typography derived from using Korean alphabets reorganised legibly for English speakers for easy reading and understanding. This section will explore how the process of experimental typography was developed and a brief summary to the experimental process of 'Konglish' itself.

Inspirations from Twitter Users and Typo

Typo in this context of research means an informal word that refers to a typographical error. It is defined as a typographical mistake made when it is typed or printed (Oxford University dictionaries,2016). As a designer, a typographical mistake is a biggest taboo in the design field. However, on the social media in the digital platform(s), these mistakes are commonly found and reinterpreted by online users to develop a new typographic and linguistic norm. It was interesting to note how these online users on social media have transformed their typo into something new and culturally acknowledgeable. One of the most interesting examples was one of the Korean twitter user's tweets. The Korean twitter user created a tweet by combining several other typographic shapes from several other languages. This involved combining English alphabets, Chinese characters, glyphs and Korean alphabets to form a sentence in Korean. The most significant lesson learnt from this Korean twitter user and other twitter users is that they do not perceive typo as a mistake/error; rather, they applied their own subjectivity to reconstruct unconventional and utterly new typographic norms. Such approach inspired the researcher to reconsider typo as not just an error/ mistake but an opportunity where subjectivity can be used as an approach to develop an experimental typography.

Process of Experimental Typography

The experimental process began with inspirations from many twitter users's subjective interpretation of typo and their recreation of conventional typographic communication on Twitter which are different from the conventional typographic error we perceive. First,a collection of several online typographical examples on Twitter were collected; then a review on how other Twitter users employed their subjectivity on typo was also conducted. This lead to designers to experiment with Korean alphabets called Hangul (한글). Hangul is a phonetic based symbol that consists of 24 letters and 27 digraphics (a pair of letters presented as a one sound) (Paek, 2014). Hangul is mainly comprised of two font styles. It is either calligraphic style that has a dynamic shape based on a brush stroke and a geometric style that is also based on simple and uniform shape. Amongst these experimental examples,the designer selected two fonts Gungsuh (궁서체) and Dotum (돋움) to a final experimentation. The experimentation process involved playing around with two styles of Hangul by rearragning the Korean alphabetic letters to be more semantically similar to reading English alphabets. The technique often involves rotating, reflection and repositioning of characters.

Result of Experimentation

There are two styles of Konglish that were developed as a result of the experiment. (See illustrated Figure 1 below)

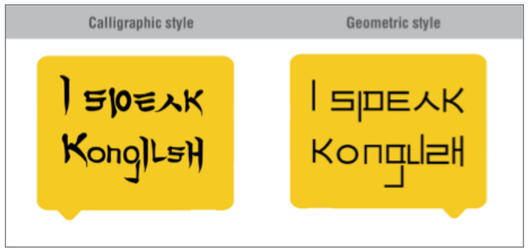


Figure 1. Result of two examples of Konglish

Through these two examples,Konglish developed from Dotum was more legible and more semantically related to the Latin alphabets than Gungsuh. However, Konglish developed from Gungsuh has more authentic and oriental aesthetic appeal that has a potential to challenge the Latin typographic convention.

Challenges and Reflections during the experimentation

During the process of experimentation, it was difficult to present certain Latin characters such as 'g' or 'p.' The challenge was that Korean letters do not have much semantic similarities. The designer took an initiation by combining two Korean alphabets or eliminated some part of the characters to make it more semantically readable. Especially Gungsuh which required more modification than Dotum because of its dynamic shapes and its more oriental aesthetic. By reflecting back to the experimental process, the designer was able to rethink about the result more critically. The designer was initially intending to experiment for new aesthetic appeal but noticed that Konglish was challenging the conventional typographic and linguistic norms by using non-Latin typographic norms.

Subjectivity in the Reflection of the Design Solution "Konglish"

This section of paper will use Peirce's unlimited semiosis theory as a discourse to reflect how subjectivity was applied during the experimental process. Peirce (1994), introduced unlimited semiosis as an approach to undestand how an infinitive meaning can be produced from indivdual's subjetivity. Crow (2010), briefly stated that Peirce's unlimited semiosis is an ongoing chain of sign production. At first, it emerges from the mind of sign reader's subjectivity to a tangible entity such as a representation (sign). This process can be repeated several times as new sign readers create new interpretions on the sign. (see illustration below 1.2). From the experimental process, it is evidently shown that subjectivity can be used as a methodological approach. For instance, During the experimental process of Konglish, the original meaning of typo was just an error, however, the meaning of typo was reinterpreted by Twitter users' own subjectivity and reinterpreted as something new and cool thus discovering unconventional typographic and linguistic norms. The designer also applied her subjective experience on Twitter user's approach to typo and reinterpreted it into an experimental typography called 'Konglish'. By reflecting back on the experimental process, a significant contribution of subjectivity was not only created but an opportunity to errors/ mistake with a novelty of typographic forms were also created. (see illustration below Figure 2 below)

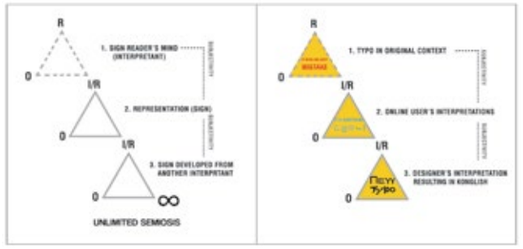


Figure 2. Diagram of Peirce's unlimited semiosis to subjectivisation of experimental typography

Conclusion

This paper explored how subjectivity can be used as a method during the design experimental process. Even though concept of error/mistakes seems to be perplexing and vague, it can also represent anything because it is not fixed. Hence, subjectivity can be applied to create an infinitive meaning and opportunity to explore. The designer interplayed her subjectivity from the typo created by several Twitter users and their subjectivity. Then applied her experimental process to successfully create an experimental typography called, 'Konglish'. The result of this experimentation lead to creating an experimental typography to challenge the conventional typographic and linguistic norms. Furthermore, by reflecting on the process provided a comprehensive methodological approach to error/mistakes. This paper will be concluded with a quote from Ellen Lupton's book, Thinking with type, "Go forth and reproduce" (Lupton, 2010:219).

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Making the creation of fashion visible

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ABSTRACT

This research paper discusses processes of garment making, which are ordinarily tacit, from the perspective of the fashion designer-maker. The paper draws on Ph.D. by Project, Metamorphoric fashion: a transformative practice nearing completion at RMIT University. In fashion design, a critical consideration of the status of the made garment reveals its elision by the represented garment and its semiotics. While more broadly material thinking is developed in related disciplines of design, art, and craft, fashion design is largely disassociated from material transformation.

While fashion making processes lack visibility, a revaluation seems only possible if such methods gain transparency and reaffirm their proximity to hand-crafted-ness, which in the past was more widely acknowledged. When a fashion designer is also a maker, garment making processes can be a creative and empowering means of coaxing the unknown into existence. A critical reappraisal of processes of fashion making is, therefore, timely.

Reflection on making processes reveals discontinuity, chance encounters and discovery, the fragmentary and partially formed. This experience involves negotiating ambiguity which for a designer must be embraced to be transformed. When valued as generative, newly fashioned outcomes can emerge.

The research develops methods to articulate fashion design making as transformative, using a creative practice methodology. The subjective positioning of the researcher's experience and tacit knowledge is acknowledged and surfaced. An intimate perspective of engagement between self and material is partially revealed using video methods, to convey the complex interlinking of concept and material involved in fashioning change.

Keywords

fashion design practice, creative practice research, fashion making

INTRODUCTION

This research paper discusses processes of garment making, which are ordinarily tacit, from the perspective of the fashion designer-maker. This draws from creative practice doctoral research titled, Metamorphoric fashion: a transformative practice nearing completion at RMIT University. In fashion design, the made garment, considered as a material process of design, is largely invisible from a critical and creative perspective. Surveys of literature which relate the making of garments, mostly rely on describing and visualizing processes using step-by-step methods, to achieve pre-determined outcomes for finished garments. Rarely are processes included which evidence methods used by fashion designers to generate future or unknown design outcomes through making. Such methods are described as transformative when they are used to develop new approaches for fashion design.

In this paper, I introduce a range of theoretical issues which have been considered as this research progressed, and together identify the importance of developing material thinking for fashion design practice research. In my experience as a fashion design practitioner, the Ph.D. research has enabled a critical perspective to form, which draws into relief habitual methods of practice and stasis between design, pattern cutting and making garments. This research demonstrates how design through making can be activated to achieve transformation in practice, with significance for creativity and innovation in fashion design and creative practice research.

When a fashion designer is also a maker, garment making processes can be a creative and empowering means of coaxing the unknown into existence. Fashion designing through making happens within peripersonal space, with the body of the designer interacting with materials close at hand, as a process over time. Peripersonal space describes the space surrounding the body [Serino et al. 2015], and neurophenomenological research suggests that we make sense of what is within our reach partly by anticipating how we can interact with it [Jackson 2014] using skillful action. At times when making, what is grappled with is unknown using language and visual thinking, instead, understanding emerges while interacting with materials and methods. Using multiple sensory perception, ideas are experienced, felt or sensed as fragments which hint towards something else. Aiming to account for fragmentary experiences, requires an individual creative methodology to account for peripersonal interactions.

Systemic Garment Identification

The dominant theoretical perspectives which link fashion studies to linguistic, structuralist, origins [Thornquist 2014; Woodward & Fisher 2014], and the linguistic turn [Rocamora & Smelik 2015] foreground some types of knowledge more than others. Such perspectives draw focus to the represented, and immaterial garment [Sykas 2013] through word and image. The development of material culture studies attempts to redress [Woodward & Fisher 2014] the elision of materiality which this entails. However, the focus on finished artefacts has resulted in a whole range of experiences connected to the process of making to be neglected [Ingold 2013].

This background implicitly influences methods of designing fashion, in a market-led context. Garments are identified through named categorisation of styles and details; reinforced through drawings, specs, photographs, and colloquial experience of garment styles circulated in images and through wear. Such identifiers pre-code the understanding of spatial attributes and properties of garments, forming a professional language for fashion designers, with a focus on textual and visual communication. Consider for example, an arbitrary selection of the following garments and details:

Pant (trouser, cargo, jeans); Top (blouse, cami, t-shirt); Pocket (patch, side, welt)

What I mean is that such names conjure an image which pre-codes their identification. This is more pronounced for fashion designers, who navigate a large vernacular of garment terminology, and representations of garment styles and details.

The influence of semiotics and systems is evidenced in the majority of texts which introduce methods to make garment forms for fashion designers. For example, textbook style publications which introduce pattern cutting techniques [Aldrich 2015; Joseph-Armstrong 2013; Joseph-Armstrong 2013] are organised by garment categories. These present step-by-step methodologies to create named garment styles. While necessary to introduce industry conventions, such approaches can limit a fashion designer's creativity. This is discussed in the study of knitwear design by Landahl who identifies the most common way of describing garment form is by garment type and silhouette [Landahl 2015, p. 13].

Fashion Design Creativity and Making

Research which considers creativity in the fashion design process [Black, Freeman & Stumpo 2014] frequently overlooks the material dimension of creativity for fashion designers. To build disciplinary knowledge in fashion design, Thornquist argues for the necessity of basic research into propositional knowledge of fashion design as an art-form, with a focus on ontology [Thornquist 2014]. Rocamora & Smelik [2015] evidence that more broadly, the material-turn draws focus to how knowledge emerges from singular, embodied experiences involving agency [Rocamora & Smelik 2015]. Both views indicate short-comings of post-structuralist approaches in the field. Considering how knowledge emerges from interactive encounters between individuals, materials and methods requires a different theoretic account.

Research shows that fashion design processes are linked to specific physical locations [Eckert & Stacey 2000] and accounts of tacit knowledge by fashion designers have been minimal [Finn 2014; Norris-Reeves 2015]. More flexible descriptions of what fashion practice is, are necessary to account for experimental, conceptual, and interdisciplinary modes of practice [Bugg 2006; 2009]. Communities of practice such as slow fashion [Fletcher 2010] and artisanal fashion [Aakko 2013] evidence increasing critique by fashion designers towards mass-manufacturing. Meanwhile, research in creative pattern cutting shows that design occurs through pattern cutting [Rissanen 2013; Roberts 2013; Rissanen & McQuillan 2016] and simultaneous approaches [Townsend 2004]. While contemporary craft research foregrounds experimental forms of making and thinking [Bailey & Townsend 2015], this is undeveloped in fashion design research. Through this positioning, I identify my fashion design practice as an experimental and critical artisanal practice. Throughout this research process, it has been actively transformed.

Fashion designers elude to the movement involved when designing fashion through making. Miyake describes how this process emerges; 'my clothes are born out of the movement of my hands and body' [Miyake 1983, p. 103]. Roberts emphasizes the physicality of the fashion design and pattern cutting process as activities connecting bodily movements to the mind and perceptive spatial awareness [Roberts 2013, p.13]. While designers evidence that change is a persistent quality when making garments, many admit they just don't know [Owens 2014] how the design process happens, there is rarely time for sustained analysis or reflection; 'one just does it' [Aldrich 1990, p. 17]. There are many opportunities for fashion designers to contribute towards creative practice research development for the field. This is an important area of research for fashion design, because it is necessary to make more explicit how fashion design occurs through making and to evidence diversity and variability in fashion design methods as they are practiced. This is critical to develop specific research methods which are appropriate for studying fashion design practice, in order to share this knowledge.

As fashion designers work in highly individual ways at the most innovative ends of the market, typically these processes may be hidden from view. Reconsidering the value of fashion making seems only possible if such methods gain transparency and reaffirm their hand-crafted-ness, which was in the past more widely acknowledged as the couture system connected the materiality of fashion design to craft and textiles more closely [Bugg 2006]. While such techniques still exist and distinguish a level of skill and quality, limited research demonstrates the creative contribution of making in the fashion design process, and limited sharing of this knowledge. Distinct from the representation of making processes which link designer to consumer, such methods require an attitude of curiosity, combined with careful observation, material investigation, and experimentation. A critical approach to reflection, documentation, articulation, and communication is necessary.

A Metaphoric Creative Strategy for Fashion Design

This research uses a creative practice methodology, offering a case study of how making operates within an individual practice of

fashion design. Such a design process takes time to emerge and develops through combining different types of skills and knowledge. Formed in the intimate micro-actions when manipulating materials, tacit knowledge merges with design intention, and an encounter with the unknown. Some research evidences there is a need to account for transformative experiences involved in making as a creative process, highlighting emergent qualities [Ingold 2013]. In this research various making trajectories emerge, hybridize and synthesize. The result of this research is a new technique for designing garments directly through making them.

A series of experimental garments were made throughout the course of the Ph.D. The concept which grounds the experimentation developed from a study of metamorphosis. By creating a body of primary and secondary source material, I aimed to draw into relief tacit understanding in the fashion design process, by a corresponding study of something unfamiliar. In this way, I hypothesized that change might be effected in practice I recognized was systematic. One way this was expressed, was in the pre-coding of garment styles and details through activities of drawing, naming and costing, for seasonal fashion collection development.

Adapting source material for the purpose of garment design is a method used in habitual practice to provide a narrative for seasonal collections. Before this research, I didn't have a useful way to describe how the translation of concept to material occurred when designing. It just seemed to happen. What emerged as the research progressed suggested that to convey fashion design through making it is necessary to explore methods for articulation of fragmentary experiences and peripersonal interactions.

At first, close observation of metamorphosis was achieved through becoming a lepidopterist and growing butterflies. Daily methods involving observation and documentation were established which included macro photography, watching, note-taking, drawing and blogging. A large repository of primary research data, was revisited often as the research progressed. Figure 1 includes some photographs taken of the chrysalis formation, which were revisited at various stages. Figure 2 includes stylistic drawings which developed over a period of weeks, while waiting for the chrysalides to emerge.



Figure 1. Documentation of observed chrysalis formation

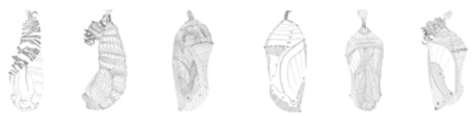


Figure 2. Drawings of the chrysalides

The drawings act as prompts and reminders of the close encounter with the insects as time went by. When drawing this series of repetitive marks on paper, it was as if I was touching the chrysalis. As I closely analysed the contours of the shapes with my eye, these translated to repetitive marks on paper, and I dwelled, thinking through possibilities for how subtle contours could become garments. Through drawing, a process of thinking toward future making activities, while observing, was being enacted, as if touching through watching.

Metamorphosis, as a metaphoric strategy underpinning the creative methods of the research, becomes a way to shift systemic habits, through critical reflection and correspondence. While metaphor is conventionally described as a linguistic or visual strategy of substitution, in the context of practice, it can more broadly be a creative strategy for transformation [Schön 1983; Singer 2011] and a mode of thought [Ox & Elst 2011]. As a design strategy for 'cross-domain mapping' [Lakoff 1993, p. 203] explicit use of metaphor can enable a creative correspondence to be formed between a known domain and an unknown target domain.

As this research progressed, focus was drawn through this strategy to design garment forms, which did not rely on semiotic or representational garment identifiers, such as conventional named garment styles and silhouettes. As I slowly gained more knowledge of metamorphosis and lepidoptery, this enabled me to form a critique of habitual practice, to unlearn habits which pre-empted design outcomes, and transform a method for designing fashion through making.

Coaxing the unknown into existence

While a process in the most direct sense can be considered as a continuous course of actions, events or changes, reflection on making processes, reveals something different. Evident are encounters with discontinuity, failures, synchronicity, and discovery, as the result of coaxing what is unknown into existence.

A finding from the research indicates that to consider how movement operates through making, a different way of identifying what it is that is being made, what is being fashioned, is useful for the designer. Fashion can be understood as a way to bring an idea into being, 'as a process of materialization' [Woodward & Fisher 2014, p. 16]. This shifts thinking about what fashion is to how it comes to be. This has relevance for the designer who makes, because, in bringing new garments into being, there is a continuous imaginative projection forward towards that which does not yet exist or cannot yet be named.



Figure 3. Drawing a sense for movement anticipated in the making

Early on, when trying to think through how the concept of metamorphosis may be expressed in garment form, a series of quick sketches (Figure 3) aimed to convey the sense of movement observed in the chrysalis formation. These drawings indicate a type of not-knowing. Rather than define exactly how and where the garment design will be cut, they suggest a gap; a series of movements that are anticipated through handling the textile, cutting and assembly.

Using the metaphoric strategy, I first identify the qualities I aim to evolve in the making process by a conceptual interpretation of the primary and secondary research, and let this guide the design outcomes. The metaphoric strategy involves substituting a chrysalis for the garment in the design process development. But more than this, it focuses attention on movement, and change, which defines the process of metamorphosis as transformative. This strategy helps to focus thinking about physical properties which can be explored through making, without the need to identify what they necessarily have to be (yet). They are becoming. An imaginative, conceptual mapping, drawn from qualities observed in metamorphosis, was transferred to the fashion design context. This shifts habitual thinking in terms of garment styles.



Figure 4. Dynamic dress experiments

Through making I demonstrate that the surface of the garment can be designed at the same time as its form, and co-evolve patternmaking, design and garment construction; this method of fashioning garments relies on exploring opportunities between methods of fashion design and making textiles. This method is represented in Figure 4, and draws directly on my tacit knowledge and skilled making, however, repurposes these for a new method of dynamic garment making.

When designing the surface of the garment at the same time as its form, there are not necessarily adequate words to describe how the form transitions through different expressions, before it is identifiable as a garment. Although each garment form expressed in Figure 4 is a dress, the variations expressed in the iterations of this dress in the round, are inadequately described by the word dress.

New insights arise as a result of experimenting with methods to capture the evolution of process, using a variety of techniques, including photography, video, writing and making.

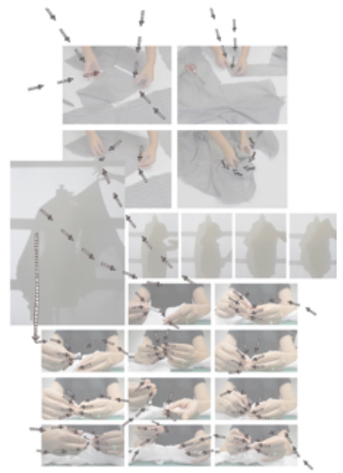


Figure 5. Making movements visible

The movement between different skills and knowledge used to fashion garments becomes more evident through mixed methods. These give account to both finished and fragmentary forms which express the making process as a process of movement. While the current outcomes of this design method are dresses, the approach to making them evolved directly through the cutting and combining of cloth, not through a pre-determined identification. They could have been other kinds of artefacts, and this making process was used to create interior textile outcomes as well.

In the research process, video methods are used to record various activities when designing through making. The purpose of making the videos was to document the transitions of the garment development, as it is becoming a garment. The videos are useful to generate reflection on processes of making, as they emerged, and as they evolved over time. The aim in these processes is to gently coax the form of the garment, through the intimacy of sensing that occurs in the process of working with materials, their properties, and a concept of change within a peripersonal space.

While representation through imagery and video are effective means to promote the represented garment, they can also be used to improve the processes and understanding of designing garments through making, when approached dynamically. Mixed media can more adequately express the range of perceptual experiences in creative practice for the purpose of reflection, critique, communication and dissemination. When constructed as research methods alongside a practice, this reveals a journey of trials and errors, aims and chance encounters. The interlinking of material and concept is shown as complex and nuanced. This complexity embeds fits and starts, successes and failures, which more adequately conveys the experience of the fashion design making process.

Conclusion

The metaphoric method proved useful as a means to shift habits in fashion design practice and evolve critical reflection for practice and research. I found that by shifting the garment identification to an alternate source domain, such as the chrysalis, a sustained line of questioning developed which focused on rethinking what a garment is, how it is identified, and what it can be. These questions were explored in the making of experimental garments, and come to be reflected through a changed approach to making them, and their changing forms. This drew focus to thinking through making which happens as ideas are trialled, materials are fumbled with, cut out, sewed together, played around with, and turned back and forth.

By taking the time necessary to observe, document and draw out this process, through sustained reflection, a different perspective emerged which evidenced the importance of materializing design ideas, and the need for alternate methods of identification and description. In the research process, the garment shifts its identity and reflects a change in thinking, from a product associated with market-led conventions to an artefact of process. The research revealed that a different way of describing and relating the practice was necessary to convey the fragmentary, formative and generative garment making methods in a way that habitual practice could not. Through a series of experimentations, trials, and errors, various methods to record processes, and to represent them were

developed, which aimed to more adequately convey the richness of this experience, its subtleties and ambiguities.

The findings which emerge through a closer examination and development of fashion design through making, reveals how the semiotic representation of garments, can be shifted in practice, by drawing attention to the nuanced experience of designing through making through an individual designer concept approached metaphorically. This expands the application of methods already used in fashion practice, and repurposes them towards criticality.

A focus on fashion design as a holistic practice integrating hybrid methods, could assist to support research development more broadly which involves designing through making. A reconsideration of making as transformative, rather than instrumental for fashion design is a key way the discipline can develop contemporary research which connects to broader research communities in material thinking, craft, design, and creative practice. Fashion designers have a unique contribution to make within this transdisciplinary area of research, considering our methods can be particularly highly engaged with material transformation. Making such methods more explicit will assist to transform tacit knowledge to shared knowledge for the field.

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Wheelchair with structural design in tensegrity bamboo

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ABSTRACT

This research is part of the universe of people with special needs and aims to develop a new technology to design the wheelchair frame. This structure will consist of a compound tensegrity module bamboo poles and post-tensioned cables and adopts all anthropometric standards with respect to ergonomic studies and individual needs of use of the wheelchair. This new concept of structure design, to be unheard of, resulting in an innovative product and allows new interpretations and developments. This research also initiates a new interpretation of tensegrity by its application to orthoses for rehabilitation that is currently widespread in art, architecture and product design. Your job can fill some needs the body adaptation favor the flexibility of the structure that absorbs the most sudden movements that may cause nuisance, injuries and poor user accommodation to the wheelchair.

INTRODUCTION

This research was the result of the author's PhD and aims to develop in the Design field, from the structure tensegrity, used today only in the field of plastic arts, technologies (methods and techniques) which manage their application into objects of utility. In particular, the aim is to study the case, by the problems faced by their users when dependent on it for an extended period of time daily, to extend the possibilities of use of tensegrity. From the studies, attempts to develop a project of wheelchair that make use of tensegrity structure to achieve a production without need for rigid structures with metal welding and that in the context of usability adds comfort and safety. The methodology of the project based on ergonomic analyses for the development of the design of the test model and physical model for production tests applied to wheelchair users.

Development

Ergonomic Analyses

The analysis of this project had as its starting point all the surveys conducted by the author of this research on their dissertation held in 2004, titled "wheelchair: a design approach and Statute", where they raised all aspects of usability and ergonomic. Add to that, the polls had the endorsement of the professional clinical and technical body of the CVI-PUC-Rio (Independent Living Center of the Pontifical Catholic University of Rio de Janeiro).

Such analyses were centered on ergonomic issues of body positioning in wheelchairs where they were observed various postural items that improve performance in use and allow for greater user comfort as the positioning and curvature of the trunk so much in order to lateral frontal are influenced by the width of the seat-which can generate side tipping deepening scoliosis – (fig. 1), by the depth of the seat-which can generate front tipping deepening the lordosis and kyphosis. The study is more detailed and can be seen in full in the text of the master, quoted and title in the eponymous title of this doctoral work.

Keywords

wheelchairs projects, tensegrity, bamboo

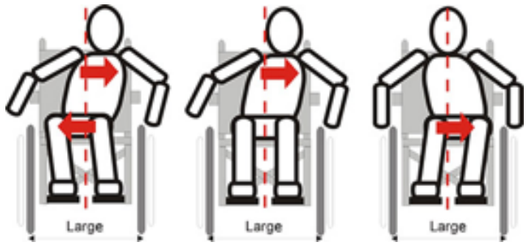


Figure 1. Trunk lateral instability - prepared by author

Contribution of Tensegrity

Tensegrity is the name given to describe physical structures assembled by rigid stems that do not touch each other and are kept in their place by traction cables. In these structures, the parties not to support each other and are connected by flexible cables, produce the effect of spring, being that its main feature and observed in this research. There are some basic arrays of shapes of the system that it calls basic cell, as shown in Figure 2.

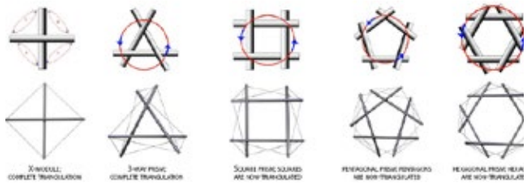


Figure 2. Cell combinations tensegrity - Snelson, biography

Contribution of Bamboo

To realise the benefits of the application of bamboo in relation to steel, for example, bamboo offers a tensile strength versus specific weight 2.77 times more than steel, as reported in the table below.

Material	Tensile strength (Mpa)	Specific weight (gf/cm^3)	$R=(\sigma_t/\gamma)10^{-2}$	R/ Raço
Steel	500	7,83	0,63	1,00
Bamboo	140	0.80	1,75	2,77
Aluminum	304	2,70	1,13	1,79
Cast Iron	281	7,20	0,39	0,62

Table 1. Tensile strength Ratio X specific gravity. Source: 1992 Ghavami

Another advantage is the relationship between your specific weight Vs. resistance. A comparison based on production per unit of power voltage for building materials shows a bigger difference reaching 50 times, as shown in the table below.

Material	Bamboo	Woody	Concrete	Steel
MJ/m3/ MPa	30	80	240	1500

Table 2. Power Relationship of production per unit of voltage. Source: 1992 Ghavami

Bamboo is a tropical plant that has a renewable annual cycle of reproduction without the need for replanting, in addition to being the natural resource that is renewed in less amount of time, in the absence of any other species of forest plant that can equate in growth rate and of for planting area. For these features bamboo is a great agricultural potential and that consequently presents itself also with great potential for application in large scale by industry. In addition to being an efficient carbon fixation, has excellent physical, chemical and mechanical characteristics.

Design Development by Bamboo Tensegrity

The theoretical scope of the research suggests that the evidence of the investigation being obtained through practical testing with permanent wheelchair users. In this sense the prototype design was created for the tests and consequently a project that included all the technical issues and integrated the tensegrity structure to ergonomic concepts, inherent to the object in question, in order to provide tests with users with security and suitable for responding to the questions of the survey.

In the first phase of the design of the wheelchair tensegrity has been set the module tensegrity to be used would be developed by the supervisor of the PhD Prof. Ripper in the 1970 and which was based on the weather kites. Such kites have the same characteristics of shape of which are made for the entertainment of children, who are boring and flat as a sheet of paper and are structured by slivers of bamboo stems joined by cotton line. These flat kites do not form a tensegrity module, do not have the specific spatial characteristics. To facilitate the understanding of the development process of the duplicate of the casks placed imagine module in parallel with a transverse shaft, Figure 3.



Figure 3. Tensegrity original of Prof. Ripper - prepared by author

Set the tensegrity module the project focused on defining a position coincide the anchoring points of the set of use (set the backrest, seat and footrest in metal) with the stems of tensegrity module, and tensegrity allows a multitude of positions that can be seen in three dimensions which makes the definition of the ideal position. So, the first step was to analyze the two structures, tensegrity and set to use, and check the possible coincidences. Forming itself and especially the front wheels provided the path to follow. The front wheels are positioned parallel to the front of the wheelchair and the tensegrity module has two pairs of parallel rods. From that coincidence both configuration structures, were attempted a series of positions to find the ideal position. One of them was to position the tensegrity module horizontally so that pair of parallel rods stay parallel to the ground, as shown in figure 3.

The design of the wheelchair tensegrity is with use and the tensegrity module attached and adjusted, ready to be finalised with the basic use items like brakes, armrests, seat and backrest tarps and the footrest. The set developed in digital 3D application can thereafter the development generate detailed technical drawings of manufacturing will give subsidies to make up the test template and feedback the test model itself.

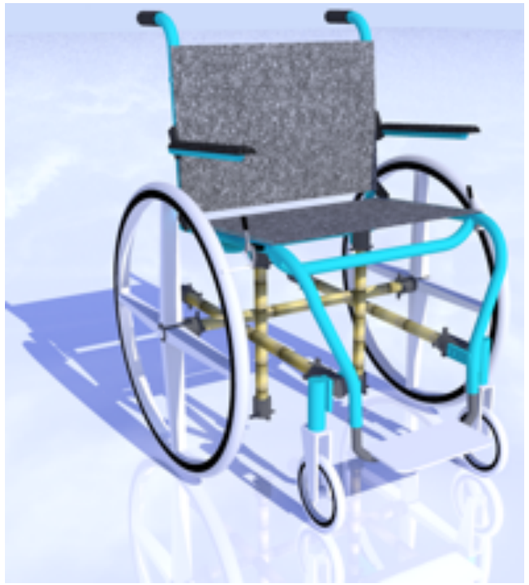


Figure 4. Prototype design the wheelchair of tensegrity structure - prepared by author

For definition of the form of the connection of the bamboo rods with steel cables of tensegrity structure stipulated that the connections of the bamboos and tubular metal would be and this would also set the belt loops of steel cables, i.e. each connection would have two functions in the least. It should be noted that the connection to all the tensegrity structure has the same function of compress bamboo rods, but when coupled with the use each connection takes on shape and specific function depending on the part that is fixed and interacting between tensegrity structures and use.



Figure 5. Steel cable connections - prepared by author

Tensegrity Wheelchair Test Model Construction

For the production of the test model was developed a template which formed the basis for the use of metal set, consisting of the backrest, seat and footrest, with tensegrity structure of bamboo.



Figure 6. Set using the standing wheelchair - prepared by author

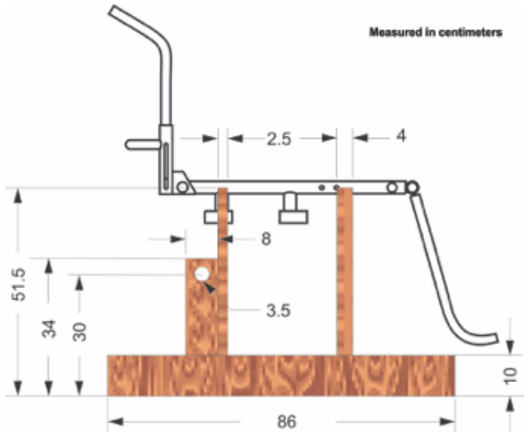


Figure 7. Technical drawing of the template for the set of use - prepared by author

Defined the measures and positions as the technical drawing was started the production of the feedback of the parties that are the holders of the bamboos of tensegrity structure. This step before the final Assembly of cables. Therefore, it is extremely important that is held within the stipulated specifications. With the cabling terminated the manufacturing phase of the test model was completed successfully, set the application methodology of the tests.



Figure 8. Gauge ready with the five rods positioned - prepared by author

After the production of the metal connections, which will serve as the anchor cables, has begun the final Assembly of the model for the cabling.

With the cabling terminated the manufacturing phase of the test model was completed successfully, set the application methodology of the tests.



Figure 9. Test model of the wheelchair of tensegrity structure - prepared by author

Application of Tests with Users on Wheelchair Tensegrity

To structure the tests was chosen qualitative research technique called-action-research-that best shapes the needs and specifics, because this technique interferes with the field researcher where the research takes place, along with interlocutors present, i.e. There is a cooperation between the participants to solve the problem.

For the application of the practice tests, was designated by the technical advice of CVI/PUC-Rio, the test model of tensegrity Chair should be used by the user in your home and/or places of their daily lives to perform all functions and routine actions for two days.

With respect to the analysis of the practical tests was defined that users should make a comparison between using their wheelchairs (activity of daily life) of rigid structure, with the test model tensegrity. Thus, users would have a parameter where analysis could evaluate the research questions in the questionnaires, which were defendants applied after the two-day trial. The interviews, if there is availability of user, would be carried out on the premises of CVI/PUC-Rio with the presence of a multidisciplinary group and so manage the results.



Figure 10. Meeting of the multidisciplinary group on CVI/PUC-Rio - prepared by author

Thus, it was mounted a detailed process of research targeting your organisation with the ordering of the sequence of practical tests with the user to the best getting the data.

1) Creation of questionnaire for cataloging of reports from users of wheelchairs in use of wheelchairs post-tests.

2) Choice of wheelchair users by criteria and indicate the CVI/PUC-Rio.

3) Application of tests with users to study the behavior of disabled people to the functional model simulating situations of everyday use in your own home. At that moment will be collected some photos and/or videos for cataloging of the tests.

4) Analyses of comparisons between the use of tensegrity Chair with the Chair of the user himself.

5) Collection of the results of the practical and theoretical studies through study group composed of the supervisor of the research, the researcher, the wheelchair user and the professional group CVI/PUC-Rio. At that moment will be collected some photos and/or videos for cataloging of the tests.

The three people who tested the wheelchair tensegrity gave a favorable opinion on the question of the structure absorb impacts and provide thus greater comfort. The bear, all participants signed the term of free consent, as well as the authorisation for disclosure of their names and images in scientific publications. Both documents can be found in the appendices to the thesis.

Conclusion

At the end of the research we have come to the conclusion that all the questions presented as the problem of research objectives: General and specific, and the hypothesis formulated were correct and have been proven by tests. Thus, the conclusion is that the research is justified and is able to provide academic and social developments in the field of assistive technology and rehabilitation and still be applied in similar products in the structural and functional aspects that are moved the wheels.

Based on the results obtained in the research, after tests with users and discussions with the multidisciplinary group of professionals in the field of rehabilitation, were generated numerous suggestions and contributions to suit the design of the project needs and practices of use, as well as to new technologies and materials in the production of wheelchairs, all with the aim of improving the quality of life of the user. It was also possible to envision the possible consequences of the initial project, done for the test model, which resulted in some proposals to the Chair design and can be observed in the conceptual design proposals.



Figure 11. Conceptual design proposals - prepared by author

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Experiments on the making (t32 work in progress)

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ABSTRACT

As an architect, one is trained to apply a mode of operation - a cyclical chain of events deriving from (observation(discovery)>possession(initiative(notations))>interpretation(readings)>assemblage(-composition))

In any part of the chain a new serial as a loop can be introduced. This mode of operation entails production of derivative variations accommodating a reading of differences in the material as well as in the space in between, facilitating possibilities of chance encounters, discoveries.

The work is developed as a fragmented assemblage of representations of T32 (acronym – a road, 32 – house number) – inferred and derived – a smallholding situated in the outskirts of the village, before, during and after demolition (2014). The landscape in a constant change represents deprivation of the built environment and of the cultural heritage, becoming the vessel (conductor, facilitator) of memories of the places of obliteration it exposes; the erasure of significance of the past, and possesses their validity in the present and the future.
Methodological approaches explored in the contextual, the serial, relating to T32 its heterogeneous representations; the findings, the manipulated drawings, and models. These are assembled in one installation – a prototype. A prototype that explores through its making how it can contain the findings, the manipulated drawings, and models.

The experiment seeks to challenge the perception of a place, a (re)construction that relates to its origins, its providence(history), and to question its contextual expansion. A construction of an installation interpreting the relation and situations explored in the series – before, during and after.

Keywords

installation, representation, serial

Experiments on the Making (T32 work in progress)

"His quest is total even where it looks partial.(…)The upshot is that what he has found he does not yet have. It remains to be sought out; the discovery itself calls forth still further quests."[2] - Maurice Merleau-Ponty

Mode of Operation - A Cycle

(observation(discovery) > possession(initiative-notations) > interpretation(readings) > assemblage (composition))

As an architect, one is trained to observe, and thereby gain knowledge of (and from) our surroundings with an aim of translating this phenomenological and empirical experience into architectural propositions. As the initial component of the chain of events, observation already introduces possibilities of chance encounters, discoveries. The next link in the chain is a conscious action to take possession of the discovered; this could be acquired by techniques such as notations, sketches, photos, frottages, mappings (diagrams), etc.

These heterogeneous outcomes are subjected to interpretations, introducing new relations in the collected (chosen) material, adding multiple possible readings and, thereby, enabling the chance of misreading and errors (the unexpected). The assemblage is the technique that offers new dimensions of the interpreted. As such, it makes a new context where the constructed is new, yet derived from what it was. There is a history, a sequence in time, and a progression. In any part of the chain a new serial as a loop can be introduced. This mode of operation entails production of derivative variations accommodating a reading of differences in the material as well as in the space in between. As Stan Allen describes: "Tactical improvisations accumulate over time to produce new models for operation. But these new patterns of operation produced in practice are always conditional. Inasmuch as they derive from experience, they are always open to revision on the basis of new experiences, or new data." [2] In the context of this project, the tactical, is the medium where the creative derives from.

"Serial compositions are multipart pieces with regulated changes. The differences between the parts are the subject of the composition."[3]

Accordingly, the making of series introduces even more possibilities for the accident to happen and has in my designs propagated a reading of (an adoption of) the spatiality occurring in the arrangement in series the in – between the manifested material.

"T32 – Inferred and Derived – A Smallholding Before, During and After Demolition"[4]. 2014

T32 was situated in the outskirts of a village. Here the landscape is in a constant change as the smallholdings are being abandoned and consequently demolished. This represents deprivation of the build environment and of the cultural heritage. The project becomes the vessel (conductor, facilitator) of memories of the places of obliteration it exposes, the erasure of significance of the past, and possesses their validity in the present and the future.

The project's overall aim is to develop a number of architectural statements through the aesthetic and methodological issues explored in three areas:

- The contextual: How and in what media it is possible to describe the vast, unbounded and marginalised space? How to develop these registrations into architectural potential without giving up the open-ended?
- The serial: How is it possible to rethink the serial in architecture? How is the conjunction of non-trivial repetition the unbounded space? How to develop an architectural theme between repetition and variation?
- The methodological: How to carry a shift between different media such as film, photography and drawing in the development of architectural statements? How is it possible to apply digital tools in ways that qualify excess, the noise and the intractable (as opposed to the smoothness that traditionally characterises the medium)?

The work explores the above-mentioned statements, and seeks to respond the questions by the act of making. Methodological approaches explored in the contextual as the specific site as well as its cultural position, the serial relating to T32 its heterogeneous representations; the findings, the manipulated drawings, and models. These are assembled in one installation – a prototype. A prototype that explores through its making how it can contain the findings, the manipulated drawings, and models, this prototype is an initial attempt to insert the findings interacting with the viewer in an expositional way, not to imbed the original(s) as in Kurt Schwitters Hannover Merzbau hidden spaces (disappearance). The materiality of the prototype dissolves the boundaries of here and there as receivers and emitters in assonance (partial correspondence) - the prototype becomes the beacon and the antenna in space. The experiment seeks to challenge the perception of a place, a (re)construction that relates to its origins, its providence(history), and to question its contextual expansion.

The Material Consists of the Following (Architectural) Fragments

A box for radiographs (see pictures). Its content is organised in series of the events and becomes a framework for making of three short films entitled E Triology T32 Series. This series is subjected to scrutiny of the fragmentations of biopsies and captured in digital zooms through the lenses of a digital microscope. The collected and manipulated material is brought together in diagrammatic compositions; interpreted and processed into 3D digital models that examine spatial relationships as well as form the basis for production of 1:1 models.

Like in Lygia Clark's modifiable metal sculpture series Bichos (Critters), the intention was to make the prototype engage the spectator in a position of the never settled, the ever changing as it is negotiating the space through its inherent material reflections, and as such enter an afterimage or residue of T32 and its former habitants. In doing so, as Paul Veléry: states "[T]he very idea of construction, which means passing from disorder to order and using the arbitrary to attain the necessary, fixed itself in my mind as the most beautiful and most complete type of action that man can possibly undertake." [5] – as a spatial construction.

And as Peter Bjerrum reflects on the methodology of artistic research in his book entitled Three tales on Architecture's founding: "In the world as well as in architecture, which has covered the world since the break of dawn, to represent is to examine the thought in action, through thinking out the work and working with the thought. - from work to thought; from thought to work" [6]

The reciprocal is inherent in the experiment – the representations are in motion, nothing is fixed.

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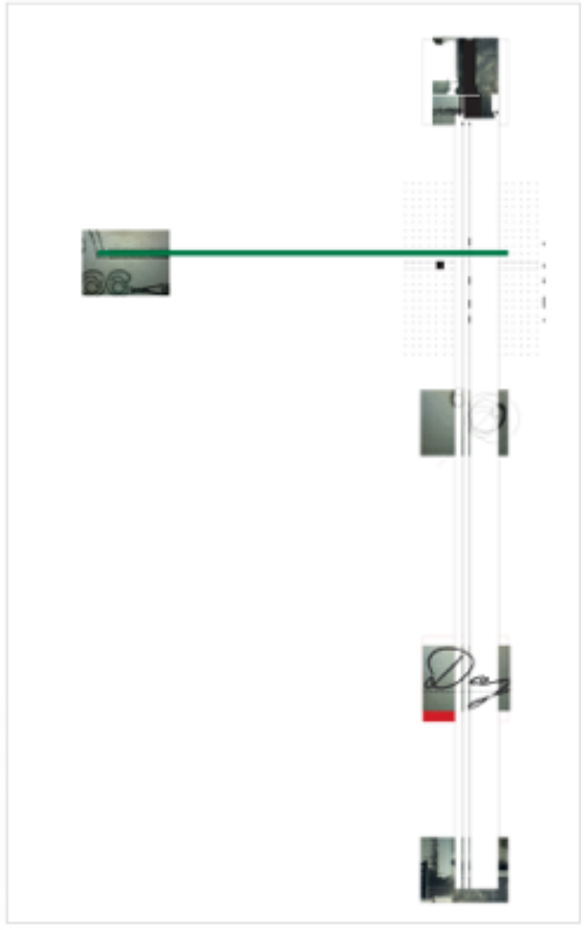
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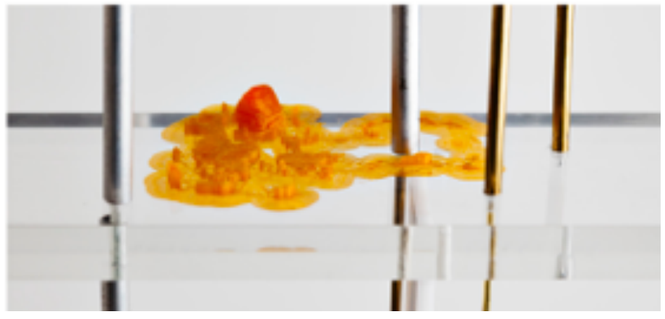
Biopsi and diagrammatic composition of wedding greeting telegram No 01. Digital zooms of the same. Photo of the “The Barn” under demolition. A box for radiographs containing: 71 greetings for E (E is an acronym for a women’s name who was the great-grandmother of the last inhabitant), a contact sheet of (E’s) wedding photographs, an advertisement for a dental practice for dentures on blotter paper. A travel clock found in the bedroom. A cigar box containing buttons and miscellaneous found in the foyer. Stills from E Triology T32 Series (3x6 min), all accessible at vimeo: 001 B&M 2016 (password T32 001 Ellen). 002 T&P 2016 (password T32 002 Ellen) 003 G&M 2016 (password T32 003 Ellen)











Prototype T32 BT 001 (telegram wedding from X-RAY box): Fragments aligned and assembled. Motif: translucent orange plastic. Im(printed): brass. Personal greeting: translucent acrylic. Technique: transparent acrylic. Edge: acrylic. Photos of Test Assemblage Claus Peder Pedersen November 2016 Aarhus School of Architecture. Link 2 min. film: Prototype T32 BT 001 (vimeo password T32 001 BT).

-36” 24” 36”-

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ABSTRACT

Blurring the boundaries between art and fashion, my work makes an inquiry into the ‘Notion of Beauty’ equating it to an hourglass figure. It questions human perception of what a perfect body size is? How does a mannequin become a perfect body reference in the construction of an article of clothing? During its making the work involves both the presence and absence of the real physical human body. Old concepts of beauty need to be re-thought and tweaked, especially when represented in inanimate objects like Mannequins.

As a textile design practitioner the focus has been on the interaction of textile with body, movement & space. Movement is considered a design material, which is embodied in this work.

The final work includes a knitted sculptural form in elastic suspended from the ceiling, a video projection and a photo print. The Knitted tubular form is human life size. The form is worn on a female body to show the effort and discomfort involved while trying to put it on. The interaction is captured through photographs. Similarly there is a video projected diagonally to the form, which demonstrates the shadow of a human figure struggling hard to get into the knitted form.

The idea is to create an installation, which reflects the effort of an individual to be in a perfect body shape. The work will be shown through an actual knitted form, its photo documentation and video documentation of figure adorning it. Together these will create the installation.

Keywords

knitted form, movement, interaction

Project Description

Idea Conception

The work includes a knitted sculptural form in elastic suspended from the ceiling, a video projection and a digital photo print. It is the continuation of an outcome developed at KHOJ Studio (International artist organisation) New Delhi, India under the concept -Idea of Fashion Ed.II: Crossovers between Art & Fashion-.

I have gained familiarity with the materials by questioning and finding new design methods in relevance to the context. Visually my work expresses the relational & non-verbal discourse questioning myself as a textile practitioner. The work has been about figuring my individual artistic skills, making aesthetical and technical decisions, exploring textile mediums, techniques and traditional practices by translating my thoughts into creative expression. The use of modern technology as a medium and methods gives me possibilities to investigate and express my internal self, reflecting on various notions & ambiguities.

Ideal Body Perception

The ideal body perception of women has changed throughout history. The concept of having a thin hourglass figure is observed to be the ideal reference in today’s time. Since 1980’s,there has been a preference for the slim-body ideal based on standard body image scales and “globally fat bodies’’(Brewis et al.1998) have been considered undesirable. On the other hand, in the pre-feminist era, possessing a plump body and the rejection of a lean body represented reproductive womanhood and a domestic identity (Bordo.S 2004).

In this project the notion of the beautiful and ideal body in today’s era has been questioned through the installation. The work creates a dialogue with the viewer about human perception of what a perfect body size is?

Execution in Relation to Concept

It has been observed that various artists and designers have used textile mediums as a mode of expression. My knowledge in the textile sector determined the use of knitting technique for execution of a body sculptural form. Chen’s (2004) concept of developing ‘Body Containers’ in knitting has been a pragmatic interpretation of this issue. It questions the relationship between body, cloth and ‘wearable art’. This creates a dialogue with an alternative view as well to express individuality.

In another case Isabel Berglund (2000) work merges art, design & fashion. It inquires the existence and reasoning of boundaries between these assumptions. The knitted sculpture reflects the fine line between finding the real and unreal form. The traditional technique of knitting has been experimented and explored with a contemporary outlook.

In my project the knitted sculptural form is made on the idea of circular knitting machine, on a wooden circular frame. The frame behaves as a point of articulation for the yarn (elastic) nails, which replace knitting needles. A tube-like structure is made with loops in elastic material. The use of specific textile material reflects the flexibility in form, which reveals the concept of material adaptability. The Knitted tubular form is human life size. It creates a dialogue, questions the sense of presence and absence of body.

The project intends to illustrate the effort & discomfort involved in wearing such a knitted form. Over here movement is considered a design material, which is embodied in this work. Exploring various body movements in relation to one’s own body inquires methods & ability of sensations. This helps to analyze the basics of movement by interaction with textile. (Loke.L. & Robertson.T. 2008).

The whole process of wearing the knitted structure is therefore captured in photographs. Similarly there is a video projection that is showcased diagonally to the knitted form. The video demonstrates a captured shadow of a human figure struggling hard to get into the form. The idea is to create an installation, which reflects the effort of an individual to be in a perfect body shape.

Thematic Statement

The work makes an artistic inquiry through knitted form into the ‘Notion of feminine beauty and its conventional associations with an hourglass figure. The project is an installation, which subverts, challenges and questions these assumptions.







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In a place like this - The book as a container of creative conflict

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ABSTRACT

In a Place Like This expands upon the issues and critical discourses within Higgins' and Sandborgs' collaborative artistic research. The central focus of this research is on conflicts in imagery and representation. The research methodology used photography, painting and text. It utilised various forms of art publications (on-line, hard copy and five unique large-scale hand-bound editions) as a point of critically engaged dissemination and a container of conflict in itself – a place for the tension between conflicting ideas and investigation to be explored through discussion.

Echoes of places, people and historical representations constitute the experience of our presence in the world. Stories and objects should not be accepted as mere constructs of fact or fiction, but rather should be considered as conduits for pluralities. Constructed through the dialogue between fieldwork, creative production, visual memories and fragments of history, this research raises questions such as 'How do we approach facts though the complex relationships of personal immediacy?' and 'How do we operate the ambivalence of testimony itself?'
This research aims to propose visual discussions and critical positions that can function as responsive 'friction points' in an image-saturated culture in which images are produced with unthinkable ease, and may potentially become disposable and forgettable. This paper will be delivered as a discursive and critical live event with an exhibition. Rather than using a PowerPoint presentation or traditional scripted conference presentation, we wish to present two of the unique hand-bound books as a live event, along with a live stream from the web-based research archive to open up, expand and engage in the research.

Keywords

image production and the act of image production - The book as a container of creative conflict

Research exposition can be found at www.inaplacelikethis.com

"I am no longer a stranger here, and the response to our misreading, only to see there is a flaw, not in the sense that it is less than perfect, rather that it is unconsidered, left unnoticed, left unopened, left untold, scratching that part of the mind, that can not let go of the conditions, for our seeing."

'In A place Like This' is an on-going research practice that expands the issues and critical discourses within Higgins' and Sandborgs' collaborative artistic research.

The central questions for the research is concerned with specific identified conflicts inherent in the act of making the image and subsequently questions of representation.

The research methodology is constructed through photography, painting and text. This further utilises the form of artist publications – on-line, hard copy and large scale unique hand bound editions - as a point of critically engaged dissemination and container of conflict in itself. The research identifies this as a place for the tension between conflicting ideas and investigation to be explored through discussion.

Echoes of places, people and historical representations constitute the experience of our presence in the world. Stories and objects should not be accepted as mere constructs of fact or fiction but rather be considered as conduits for pluralities. Constructed through the dialogue between fieldwork, creative production and visual fragments of history the research raises questions such as:

How do we approach facts though the complex relationships of personal immediacy?

How do we operate the ambivalence of testimony itself?

The research aims to put forward visual discussions and critical positions that can function as responsive 'friction points' in an image saturated culture where images are produced with unthinkingly ease, and potentially proceed to be disposable and forgettable.

The research is exploring how the production of the image and the act of making images can communicate or describe moments of erasure or remembering in terms of historical and personal narratives with direct reference to specific moments of displacement, violence and place.

This is seen not in terms of a nostalgic remembrance of the past; instead as one that is rife with complicated layers and dynamics where recognition is denied the ability to locate a physical representation. Embedded in this is an exploration of particular questions concerning the ethics of representation; the conflict inherent in the depiction of ourselves and other?

In this sense it brings into question an examination of the act of remembering as a thing in itself, through the practice based production of the image and text, and addressing cultural discourses through the form of artist's publications.

In A place Like This

Selected iterations of the research



Image 1. The grey volume consisting of 150 pages of photographs, watercolours, paintings and drawings. And adaptation one: A printed hardbound edition of 200 consisting of three separate sections that together form this singular volume.



Image 2. In A place Like This "book hive" container for the five unique artists books designed and constructed by Philipp Von Hase.

In A place Like This

Cumulus Hong Kong : Open Design for E-very-thing
21 – 24 November 2016
Hong Kong Design Institute





Image 3. Workshop and presentation of the research



Image 4. Exhibition: Blue book – 1 of 5* large format unique artists books, video, text and hard copy publication.

*Adaptation two - 5 large format unique artists books (each book is a singular edition 60 x 45 x 8 cm). Each book consists of printed photographs and representations constructed through a variety of methods that include drawing, watercolour and painting to create a singular dialectic form. The visual construe within the large format books can be viewed as a contained series but can also be seen in relation to the dialogues in the other adaptations.

Design recipes: creative pathways for product development

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ABSTRACT

Design is a collaborative venture of logic, user, material, culture, observation, intuition, experience and desire. These elements work as ingredients to form varying design approaches that are like recipes. The role of designer can therefore be considered like a chef. His skills work as his tools. The chef brings a unique taste to the dish while he adds value by some secret ingredients.

Amongst these secret ingredients user and culture are the external contents. While developing product ideas, the needs of users are processed by the designer with the help of research measurement tools (such as a measuring spoon). Intuition, experience and desire are the internal initiatives; and the designer is free to utilise more or less of them. The blend of these ingredients is the creative process in design.

I am curious about, how designers can find these secret recipes in order to develop methods for 'expert design chefs' to explore new possibilities for product design. My project aims at observing the processes and outcomes of three 'designers as chefs' - who will 'cook up' their own recipe with limited materials provided to them, to come up with a concept for any product - similar to the chefs of TV program "Master Chef". Three manually skillful individuals from different professions will be selected for this activity, carried out in Pakistan over the next month. Their development processes will be recorded in a video documentary. The design out comes in the form of artefacts will be displayed besides documentary during exhibition.

Keywords

design methods, creativity, product development

INTRODUCTION

This project intends to observe the possible flux in product design outcomes if design participation is involved. To observe this flux is vital to develop new product ideas to meet challenges of today's cross cultural society. As (Lee 2008) suggests "collecting ways of designing with people together can help designers and other people interested in this area to apply collaborative design thinking in different everyday situations." This project observes and documents the methods of three individuals who are given similar design situation to analyze the variables of their design development process. This analysis would help in developing considerations for design participation and collaborative design.

Today the role of a designer has shifted from just the creator of things to a facilitator of design experiences, services and processes. New sub-disciplines like Open Design, Shared Design, Co-design, Service Design, and Design Participation are emerging. These relatively new design domains require better understanding of process, function and creativity. The main focus of this project has been to facilitate innovative collaboration and find pathways for social inclusion in design practice. This paper reports the reflections of a design educator developed through the experience of working with different professionals in a small action research project. The project consists three concrete case studies which have been studied and analyzed to develop theory.

Designer's Role as Chef

Traditionally the role of a designer has been seen as someone who creates and develops products that are aesthetically pleasing as well as serve the function they are developed for. As (Lee 2008) comments," the aesthetic element of design, which is shared with art and craft, is still the core knowledge of the design professions". The designers are trained to process creative activity involving diverse design methods according to the type of design domain. Hence each designer is capable of processing with fundamentals of design (e.g. skill, technique, application, customer etc. etc.) in his personalised way, this phenomenon of personalised design development is generated through their perception of world and their relationship to creative thinking. As (O'Kane 2015) mentions, "Designers may have a preference relative to intelligent approaches (creative) and intellectual approaches (scientific)."

During the processes of creative thinking for design development a designer's skills are processed in the context of social phenomena and environmental issues. Design is prepared with ingredients; such as logic, user, culture, observation, intuition, experience and desire that can be mixed variously. In this regard the actions of a designer can be compared with that of a chef, who also adds different ingredients to come up with delicious food using experience of past knowledge as well as intuition. The ideal chef would be the one who considers the taste as well as the nutrients of the served dish. Similarly the "master designer chef"; would be the one who has well thought of his idea in these terms as well as those of the functional, social and environmental context.

Just as there are some tried and tested recipes, there are established methods for design work through natural, experimental, and prepared creative experiences. As it is mentioned in The Creativity Crisis, (-Newsweek-, 2010) mentions these tools and skills are necessary to learn for a young designer hence to become a Master Design Chef, there is much more than these fundamentals that needs to be learnt - secret ingredients and processes that are determined in the process of creating design recipes. Living in a multicultural and multi-disciplinary society each chef brings a unique taste while s/he adds some secret ingredients through his observation of different cultures and notions. This is described by O'Kane 2015 as awakened designer, who thinks from a universal or cosmos-centric perspective and develops an appreciation for other approaches and disciplines to contribute in design development process.

Three Design Chefs-Three Case Studies

To observe design choices and flux of outcomes, three individuals were selected and given a design problem with limitations of material and time. Throughout the project, their methods and design choices were observed. These three profiles were selected with following considerations; 1. They are equipped with manual skills 2. They are trained to work on the precision and intricacy of product of their discipline. 3. Their profession involves aesthetics

All the three participants were delivered equal amount of limitations as follows; 1.same material was provided, 2.They were to develop product, 3. A time span of 10-12 hours was sanctioned

Chef 1- A textile designer who has been through formal design education.

Chef 2- A weaver with no formal technical education and works for quality assured product development.

Chef 3- A cosmetic surgeon who is involved in creative activities as hobby.

Project Plan for Product Development by Dr Huma Omar Khan

			1 Hour		2 Hour		3 Hour		4 Hour		5 Hour		6 Hour		7 Hour		8 Hour		9 Hour		10 Hour		11 Hour		12 Hour	
S #	Tasks	Owner	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
1	Idea Generation	Huma																								
2	Tool selection	Huma																								
3	Resource Identification	Huma																								
4	Sketching	Huma																								
5	Skilled Person	Craftsman																								
6	Discussion with Craftsman	Huma & Craftsman																								
7	Search for images and products to communicate with	Huma																								
8	Outline of Sample	Craftsman																								
9	Finalisation of the Product	Craftsman																								
10	Presentable form	Huma																								

Figure 1. Hourly work plan by the surgeon

Figure 1 refers to processes and methods opted by the three individuals. The study shows that their preferences and work methods differ drastically which has affected the outcome. Designer interprets aspects in qualitative manner. Her feelings and associations with materials and colors are dominant. The form, function and type of product is explored in variety of ideas. The technician, does not consider aesthetics on priority. The idea begins with a set target. Production technical aspects are preferred and form of product is least important. Surgeon applies logical and rational decisions that are taken with considerations of pre learnt knowledge about the given material. Systematic project planning is considered vital (Fig 1).

Conclusion

This research project has realised that planning and analysis of professional from various disciplines is interestingly affected by their acquired knowledge. Therefore, interdisciplinary frameworks for designers can enable the creation of comprehensive solutions from a more informed perspective. As a result, we can discover new and appropriate ways to develop products and systems of greater value that would create holistic design solutions for evolving needs and desires of today and the future. This project has been taken as initiative to pursue for creative combinations of participant's experiences and processes of any design participation activity whether it be for aesthetic, function or service development.

The role of an expert design chef is to determine the "right" amount of combination of different design approaches to achieve one holistic idea. What happens when "A bag collects your precious memories to offer a happy healthy life?" Thus every chef designer cooks up s/his own design recipe. The "Master" is the one, who can create secret wonders by extracting the best out of it by designing a suitable collaboration of various stakeholders

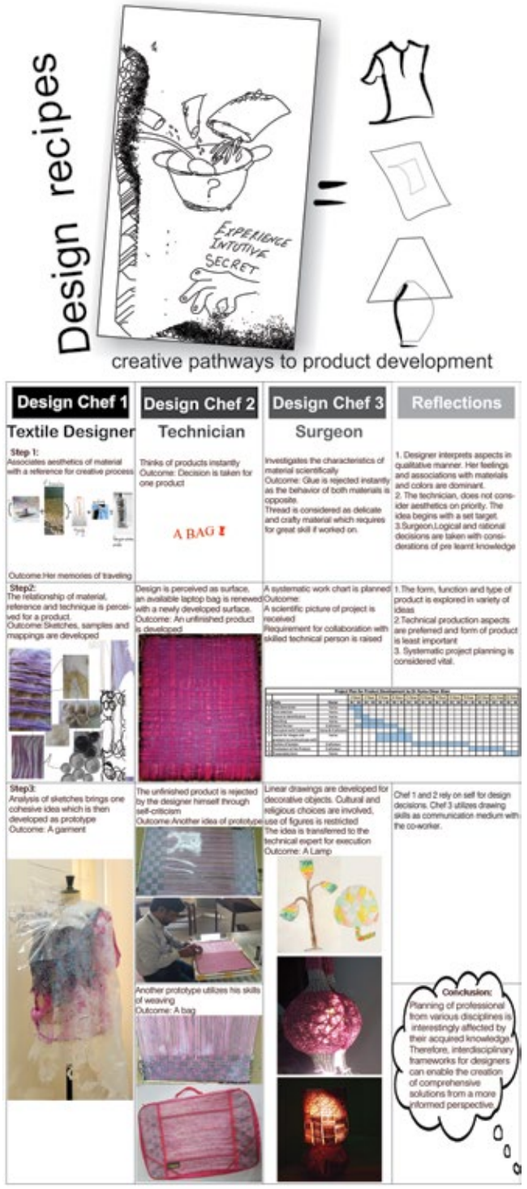


Figure 2. The following chart illustrates a comparison of the three approaches for product development





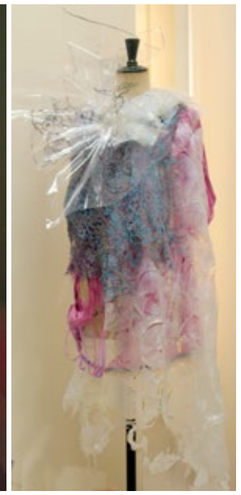


Figure 3. The outcome of three participants

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Rethinking Postcards

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ABSTRACT

Can postcards be redefined at the age of selfie greetings and social network posts? A group of 15 international students from six countries experimented on the reinvention postcards. The design process started with an introduction to communication models, to the semantics of postcards and also to the research on the historical and present use of postcards in different societies. Then a kind of uncontrolled experiments with materials, formats and production techniques followed and the first variety of drafts came up. At the next step the students began to research on possible contents by exploring the nature and the environment. The gathering of information, the search for hidden attractions and uncommon sites in town was essential to further develop the traditional design of postcards. A deep reflection on how to convey the content followed. Sceptic towards traditional media productions played a prominent role in finding new ones and the wish to expand the narrative possibilities of a picture postcard was predominant. A series of trail and error challenged this process but then very uncommon solutions came up. Critical feedbacks (individual and in groups) fostered the transformative design process. The final results showed a big variety of reshaped postcards. Postcards that enhanced the dialog between sender and receiver by strengthening narrative aspects. The future postcards are not picture postcards any more as they apply to all senses. The kind of unlimited approach to the topic, the deep and repeated exploration, the process of diverging and transforming the artifact and the support of even strange ideas lead to a number of exciting redesigns of postcards.

Keywords

design process, experiments

Project Description

A group of international design students were speculating about the future of picture postcards by rethinking and redefining traditional postcards in the digital age in an open, individual and experiment based design process. The Design methodology was roughly orientated on John Chris Jones scheme „Divergence - Transformation - Convergence“ Thematic statement for artworks:

The displayed artworks will provide an overview of the design process from the very beginning to the final designs.

Specification of display:
Five posters; length: 1189 mm, width: 841 mm

Technical requirements:
Electricity and hanging points, late installation

1. Brief Issued

Can picture postcards be transformed to contemporary means of communication? Can postcards be redefined at a time when selfie greetings and social network posts are ubiquitous and when written analogue messages have become rare?

Facing these questions, a group of 15 international students from Communication Design and Interactive Media faculties from six different countries (Ireland, Italy, Finland, Spain, Turkey and Germany) started to experiment on the reinvention of this personal and private tool of communication. The design project was part of an International Classroom at a Design Faculty. The timeframe was one semester (October 2014 to January 2015). The briefing sounded simple: „Greetings from Augsburg. Redefining traditional analogue media by reflecting on materials, aesthetics and content.“ The students were given the freedom to independently experiment on formats, media and material. No kind of limitations have been set. Only the location „Greetings from your host town Augsburg“ had to be considered.

The time frame the students were given was not meant to be strict. After an introduction and orientation of two to three weeks, a four-week-phase of exploration and convergence began, followed by two weeks of thinking of divergent plans and alternative designs before the crucial phase of transforming the experiments to a design product started which took another three weeks. In the last two weeks of the semester the final designs were produced and presented.

2. Orientation and Information

At a first step students got a theoretical background. A brief introduction to communication models (Shannon/Weaver, Lasswell) and the communication situation between sender and receiver were discussed in order to get an idea of what postcards are about and how they traditionally have been used for. Additionally, from a philosophical point of view, Jacques Derrida's „The Post Card - From Sokrates to Freud and Beyond" served to sensitise the societal and cultural aspects of postcards. Of particular interest was the dialectic relation between intimate content and the open and public delivery, as there is usually no envelope to hide the private content from public reading.

Moreover two further characteristics of postcards have been highlighted before the design process started: Firstly, the particular „the moment of absence" (Derrida) when writing a postcard to somebody and secondly, the senders uncertainty of delivery and answer. Both have been regarded as essential to understand the very unique character of this particular media.





Image 1. Defining the problems clearly

3. Exploration



Imaeg 2. Coming up with ideas

Having these aspects in mind, an expanded brainstorming began. Students exchanged personal experiences with postcards and they researched how different societies used postcards in the past and how they use it nowadays. After a first reflection, a phase of mind mapping followed: What kind of meaning do postcards have nowadays and moreover what kind of meaning they do have for sender and for receiver? How could we use such a media differently? At this very early stage, the students were encouraged to cross conventional borders and to ignore any traditional shapes. Every imagination was welcome, even pursuing allegedly strange paths.

At this point, questions like how to convey picture postcards into electronic mailing or how to add value to visual signs or how to strengthen the intimate character of this media came up while a very individual design process evolved. A kind of uncontrolled experiments with materials, formats and production techniques started and a big variety of drafts and sketches came up.

At the next step the students began to think about meaning and content. They gathered additional information, they went on tour to look for hidden attractions in town, they searched for uncommon sites and they were open for any rare observations. Exploring urban und rural environments turned out to be a crucial method and a meaningful experience to open the minds and to gain new perspectives. Students perceive the environments in many different ways: By smelling, by listening to voices and sounds, by observing different situations at various places in town. This kind of exposure to a wide rage of stimuli encouraged the students to opt for completely new scenarios. It seems that exploration strongly supported the experimental approach.

4. Alternative Designs



Image 3. The process of redefining ideas

The design process now reached a more playful stage. The so-called „Semantic Intuition" served as a methodical tool to generate uncommon ideas. By creating new and unknown word combinations and by seeking remote associations within the students' thematic focuses, divergent views were gained.

Then, a further reflection on how to convey hidden, unknown, rare or private impressions started to influence the design process. During the weeks of reflection, sceptic towards traditional media productions played a prominent role in finding new ones.

At the same time the wish to expand the narrative possibilities and the quality of information of a picture postcard was predominant. Postcards were regarded as tool for conveying various kinds of information, not only private ones but also ones that can be useful for the public.

5. Transformation

What followed - after having speculated on ideas of content and aesthetic - was possibly the biggest challenge: The students tried to transform their experimental drafts into a media similar to postcard. They tried to link content and shape, they redefined the communication situation and they reflected on the aesthetics of their artifacts. One student gave up and quit the project, a few others had to give up their original plans due to technical feasibility.

The crucial question revolved around the transformation of traditional shape and meaning of a postcard without losing the unique character of it. Also the media usage nowadays had to be considered.

A series of trial and error challenged this process. However some very uncommon design solutions came up. They applied to other senses than seeing and touching. A series of feedbacks (individual and in groups) fostered the creative design process.

6. Final Designs

At the end of the semester, the results of this open and individual design process were not overall exciting. Not all students could deal with such a free approach. Some had to give up half way and start afresh. But a surprisingly big number of students took the advantage of this open classroom and went further to discover unused paths in creating something new and uncommon.

The variety of results was astonishing. Especially the use of all senses to send greetings and to discover the city surprised the lecturers: Hearing, seeing, smelling, touching and feeling the city was an enormous extension of traditional picture postcard. Hence the future post-cards are not picture postcards any more.

The students responded to the flood of images at the digital age with a refusal of photographs. Additionally the reshaped postcards enabled a stronger interaction between sender and receiver, thus they enhanced the dialog between them and strengthened narrative and the semiotic aspects of postcards.



Image 4. Samples of design solutions

7. Conclusion

What has particularly fostered this experimental process? The kind of deep reflection at the beginning, the open brief and the inventive attitude encouraged many students. The unlimited approach to the topic, the deep, the support of even strange ideas and an atmosphere of trust and courage lead to a number of exciting redesigns. There was no pressure to create a market-ready product or to be super-innovative. However some students designed market-ready versions of postcards without intending it.

Of particular importance was also the expanded phases of exploration and divergence. It gave the students plenty of time to create new pathways. Nevertheless, transforming the experimental drafts into a coherent product turned out to be a big challenge.

There is no question that the International Classroom fostered and enriched this project enormously. Bringing together different cultures and different thinking encouraged the students to work on unusual approaches and unleashed their creative potential.

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Temptouch

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ABSTRACT

Temptouch is an artefact that is designed to question how we can do more with the vast amounts of open data available to interact with daily. It also demonstrates alternative ways to represent this information to our senses. Temptouch allows the audience to feel the current temperature of another geographical location. An audience member inputs a location and is prompted to place a hand on top of the device; the user can then know the temperature—not by sight but through touch.

This research forms part of an ongoing investigation that explores open source design and innovation. Temptouch is made within the open source paradigm. The core mechanics of the device are an open technology mini-computer and the Raspberry Pi 2. The device was developed with the open source programming language, Node-Red. All plans and programming code are uploaded to the Internet for anyone to replicate and modify. Others can interact and experiment with this concept to further understand the potential and possibilities with the use of open data.

Open data, the exchange of free online information, is often used in business or statistical mapping. Whether this data relates to the stock exchange, weather, or the latest seismic event, communication of the data habitually occurs through a visual display unit such as a monitor on a computer or smartphone. Temptouch is designed to prompt the viewer to consider the movement of data from the intangible world back into the physical. It is intended to provoke a response and invoke engagement with open data and Internet-enabled devices, especially from disciplines outside of engineering and computer science.

Keywords
open data, temperature, touch

Temptouch is a device that takes online data and represents this to the audience haptically. The audience is asked to input a location via an Internet website and is then prompted to place a hand on top of the device's touch plate; the user can then experience the current temperature of another geographical location through the sense of touch. Temptouch is an artefact that makes us question our interaction with the vast amounts of open data, how we can respond meaningfully to this information, and what alternative ways we can interact sensorially.

Open data, the exchange of free on-line information, is often used in business or statistical mapping. Different types of data are being produced by sensors or computer algorithms and are becoming more accessible to anyone with an Internet connection. The ways in which data is interpreted and communicated to humans habitually occurs through a display unit such as a monitor on a computer or smartphone device.

The interaction between the audience and Temptouch creates a channel to experience data outside the visual domain. The use of touch is anticipated to create a sympathetic connection, provoking memories or potentially an emotive response. A similar idea is illustrated by Tega Brain in her work, "What the frog's nose tells the frogs brain." This is a device that monitors the electricity usage of a building, and when this usage reaches a threshold, the device responds by releasing a scent (Brain, 2013). Brain states that a person's sense of urgency is heightened when provoked by the device's smoky smell, and continues, "it may alarm or unnerve or bring back past memories."

The artist, Nathalie Miebach, uses climate information to create her sculpture pieces. This data is used as the working blueprint for her woven basket pieces, which are graphed, not on a typical scientific chart, but through a tangible, three-dimensional sculpture. This data is also transcribed into musical notation, giving an additional element to her art, whereby, "the music conveys more emotion than her sculptures" (Hanna, 2013).

Similar to the exemplar works, Temptouch reintroduces data back into the material world. The interface asks the audience member to input a location via an Internet web page. This interaction is a modern discourse in which the audience uses a digital device to talk to a machine. This human-to-machine interface occurs through a screen; however, the response is conflicted and no longer responds in the typical digital manner. Temptouch does not reply with an email or highly designed graphical display but through a tactile, physical connection; a temperature change on the touch plate. The artefact is designed to prompt the viewer to consider the movement of data from the intangible world into the tangible. It is intended to provoke a response invoke engagement with open data and Internet-enabled devices, and further question the exploration into haptic user interfaces.

Finally, this fundamental question can be asked: Can temperature, in fact, be touched? Can temperature be represented to our senses via the tips of our fingers or palms of our hands? Does the representation of temperature through visual numbers have more meaning? Temptouch can give a representation of a location's current temperature, but only a representation. If the device was to be a direct mimic of the temperature in the Arctic Circle, for example -30° Celsius, the audience members' hands could potentially be injured by these extremes. It is also worth considering that the physiological effect on the body with such extreme temperatures would create a completely inaccurate feel of temperature, when cold and hot are no longer distinguished from each other with any reliable discernment.

This research forms part of an ongoing investigation that explores open source design and innovation. Temptouch is made within the open source paradigm. The core processing mechanism within the devices is an open technology mini-computer, the Raspberry Pi2, through the use of the open source programming language, Node-Red. All plans, three-dimensional CAD models, and programming code are uploaded to the Internet for anyone to use, replicate, and modify, allowing others to interact and experiment with this concept in order to further understand the potential and possibilities of open data. This open philosophy is intended to provoke the following question: "Given its adherence to the open source ideology, how can others modify the design of this artefact to fulfill a different objective, or perhaps, incite new ways of thinking?"

Temptouch is a device that breaks away from the typical discourse of our modern, digitally visual world. It draws attention to how open data is constantly transmitted throughout the Internet and to the need to reimagine how this information is translated to humans.



Figure 1. Temptouch with hand (Paul Bardini, 2016)



Figure 2. Temptouch (Paul Bardini, 2016)



Figure 3. Temptouch - Createworld Brisbane (Paul Bardini, 2016)



Figure 4. Temptouch – Cumulus Hong Kong (Paul Bardini, 2016)

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Auditory breakfast

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ABSTRACT

We hear, but we don't listen. This project explores audio, produced by individuals on a routine basis, often taken for granted in everyday life. Each individual creates ordinary mundane audio during their habitual processes, such as the sound of the toothbrush while brushing teeth, high heels clacking on a hard floor, or the clinking sounds of a metal spoon against a porcelain cereal bowl. "Auditory Breakfast" examines mundane auditory experiences through breakfast. From a cultural perspective, breakfast is more than a platform for eating; it is a time where family members gather to begin their day together, share a meal, or interact through conversation. This project considers these daily interactions through a 3D printed series of bowls designed to explore a variety of individual eating habits and various foods consumed during breakfast. The design of the tableware creates an auditory-based interactive breakfast experience, based on, sensory stimulation.

Objective

Individuals typically rely on their senses for the processes of learning, discovery, interaction, and decision-making. Numerous scientific studies have demonstrated how individuals register sound differently, depending on behavior and emotion during a particular moment. This project explores audio, produced by individuals on a routine basis, which can be taken for granted. "Auditory Breakfast" specifically examines this through a breakfast experience. The everyday sounds received during daily interactions and activities carries cultural habits and behavioral information. Breakfast is more than a platform for eating, it is a time when family members may gather to begin their day together, share a meal or interact through conversation. The project takes a playful approach to the breakfast experience through the redesigned of tableware. If we can expand the borders of the role of tableware, the behavior of eating might also become a ceremony of different auditory sounds orchestrated and informed by diverse individuals.

Concept

The "Auditory Breakfast" project exposes the sounds taken for granted, by individuals, on a daily basis. Ordinary mundane habits include, the sound of the toothbrush while brushing teeth, high heels clacking on a hard floor, or the clinking sounds of a metal spoon against a porcelain cereal bowl. Individuals have a unique way of eating their cereal with milk, breakfast in the morning. The audio produced is informed by the way our hands and arms move, and the way we scoop the spoon on the interior of the bowl. These interactions create a pattern of sounds, amplified according to the material and the concave shape of the bowl. This project questions whether humans coordinate the sound that is produced using the tableware, or if the form of the tableware controls the way we eat.

Method

The initial prototype was designed based on observing eating behaviors of both others and myself. It addressed the movement of the spoon along with the arm, wrist and hand to scoop out the food from the bowl. A certain sound is produced through the eating behavior of the individual and through the clinking sound of the cutlery against the bowl. Sound is usually produced by the motion of materials or objects causing vibrations, which travel in the form of waves. The material, size, and shape of the objects play a vital role in the creation of sound. Each material has a unique sound when it comes in contact with another. The architecture of the object and the acoustics of the sound, shape how the audio is produced. This can be seen in different musical instruments such as the guitar, drums and the piano. Through the process of observation, I conducted a study to analyze the different shapes of bowls and materials used among people from different cultures. The project raises the question; what if the bowl was shaped differently and made out of plastic? How can redesigned tableware inform a person's eating behavior and consequently produce a different auditory experience? "Auditory Breakfast" considers this phenomenon through open design for experimentation. Studying the interior and exterior of existing ceramic bowls informed the production of a plastic replica using a vacuum former, and experimenting with the weight, characteristics of the material and the ergonomics of the bowl. Based on the intended use (soup, cereal, appetisers) different bowls have varying features.

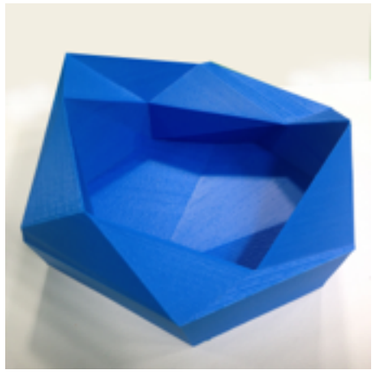
In response the interior of the bowl was the focus of the final experiment. The concave interior of the bowl was designed to be textured, so it could potentially give a different sound while scooping the food. Inspired by music scales, the redesigned bowl was 3D modeled and 3D printed using PLA plastic.

The study analyzes how sound differs through various interactions from one bowl to the other.

Each artifact posses it's own unique shape, which works in harmony with the intent of the design. "Auditory Breakfast" explores the sounds that we produce through an ordinary mundane interaction with an object, while also highlighting an auditory experience. "Auditory Breakfast" considers mundane auditory act through tableware designed to create an auditory-based interactive breakfast experience. A 3D printed series of bowls were designed based on a variety of individual eating habits and various foods consumed during breakfast. The design of the bowls is based on our experience of sensory stimulation.

Thematic Statement for Artworks

Individuals produce ordinary mundane audio through habitual processes; "Auditory Breakfast" specifically examines this act through redesigned tableware to create an auditory-based interactive breakfast experience. A 3D printed series of bowls were designed based on a variety of individual eating habits and various foods consumed during breakfast.









https://vimeo.com/181260432

Keywords
auditory, behavior, tableware

o2: u e | unexpected encounters

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ABSTRACT

o2: UE | Unexpected Encounters is an architectural board game for two players, in which these players create diagrammatic models of 'the home' they imagine against and with each other, and in which this act of play creates a spatial language that results in unexpected narratives of the notion of domesticity. The research element of the game focuses on how 'place' and 'placelessness' are constructed and interpreted through our innate creativity by manipulating the intricate operations of initial design decisions. This exhibition is a performance of o2: U E, where designers meet with others through their imaginations.

The aim of the game, 'build the home you imagine,' tends to be a spatial reflection of an aggregate of joyous moments. Meanwhile, domestic life inevitably bears the very extremes of unbounded happiness and inexhaustible trauma. In o2: U E, these extremities are played with diverse pleasure and dismay.

The game compels two players to meet in a fragile state where their imaginations are recent and slightly formed. This is a phase where an encounter with others is unexpected. Therefore, the game is an unconscious negotiation play. Throughout the game, the uneasiness of the encounter is transformed into an open-ended, imaginary communication. o2: U E does not end with a winner; it is about the uncanny experience of the unexpected and the negotiation it causes with the other.

Keywords
architectural game, imaginary, conversation

Playing is not related to our habitual and ordinary life, rather a fugitive threshold. I find this threshold as a delicate potential to research on our imagination and thus design thinking. Playing is a fleeting bundle of acts with precise rituals (Huizinga, 1971). When a game starts, the reality changes; players and spectators enter into another dimension (Sicart, 2014). Playing tends to create unexpected relations, which force us to meet our imagination at an unknown level. I think the ritual of the game resembles meeting with others; observation, conversation, negotiation are constantly at play.

o2: U E is an architectural board game for two players, in which these players create diagrammatic models of 'the home' they imagine against and with each other, and in which this act of play creates a spatial language that results in unexpected narratives of the notion of domesticity. This paper tends to explain the theoretical framework of the game, by briefly explaining how the conversation between the players constructs the imaginary home and tends to create a spatial language.

Meeting the Unexpected

Meeting others is a major data gathering sociality that people are keen on (Goffman, 1990); however, the whole event is mostly dubious. We deliberately or instinctively act to impress when meeting, Gofmann defines this as self-control to manoeuvre in the subtly ongoing intelligence game between us (1990). Meeting someone by playing is utterly unexpected; when playing, you abandon your habitual self-controlling acts.

One of the precedents of o2: U E is 'Play It By Trust' (Ono, 1966). This is an all-white checkered chessboard with all-white pieces. The initial position of the game is the same with conventional chess. The two sides blend in with each move. By playing with trust, you begin to negotiate your position and your pieces with the other. The planned manoeuvres become indistinct and your claim of ownership is blurred. This is an unexpected encounter where your differences do not individualise you but create a vibrant embodiment of you and the other. It is an attempt of uniting two minds into one to the point where no one is indistinguishable from other.

The other precedent is Zweig's 'Chess Story.' It is about a captive, Dr B. who plays chess against himself in his mind (2011). This is a game where your opponent can wander in your mind and catch your initial manoeuvres. There are no gesture mechanisms to hide your acts. These unexpected encounters split the mind and create different identities that are in constant negotiation. This is a rather schizophrenic act that forcefully creates the other from oneself.

Surprisingly, meeting the unexpected is an intimate act. What Kristeva defines as 'the uncanny strangeness' is usually misinterpreted as foreign; controversially, it lies in our neglected familiarities (1994). Moreover, understanding this intimacy, the feeble boundary between me and the other, is so stupefying that it leads to mystify our identities (Kristeva, 1994). Although the other is seen as a trespasser, they are the key to the communication with our desires (Fink, 1997).

Briefly, the aim of o2: U E is to compel designers to meet in a fragile state where they negotiate their innate imaginations with an open-ended imaginary communication. This act leads to question how 'place,' 'placelessness' are constructed and interpreted through our innate creativity. The game does not end with a winner; it is about the uncanny experience of the unexpected and the negotiation it causes with the other.

The Home Narratives

Home nurtures refuge; it is a cosy place where we willingly expose our fragility and corporal desires (Tuan, 1975). It is an accumulation of 'private and collective memories' (Wilson, 1992). The feeling of home comes from tacit perceptions. Furthermore, this derivative relation is quite intricate; what we feel can never be explicit (Tuan, 1975).

Meanwhile, the domestic life inevitably bears the very extremes of unbounded happiness and inexhaustible trauma. This dichotomy lies in the nature of the home. For Vidler, this uncanny emerges with the transformation of familiar to foreign and corresponds to 'modern nostalgia' and 'homelessness nomadism' (1994). In the game, this dichotomy is at an intrinsic level, similar to Kafka's story 'The Burrow.' In the story, 'the creature' logically builds its burrow to expel its fears of the unreasonable other. Then, understands that by building the burrow, it is trapped in with its own fear (1946).

Home is a delicate place, whereas 'the home you imagine' is its lurking double.

When we imagine, we use 'irreal object'; a multiplicity of connected images where the time and relations are different from our normative perception (Sartre, 2010). The home you imagine nestles multiple layers of memory; projections for the future; tacit knowledge of placeness; fears that need to be expelled.

I use 'build the home you imagine' as the task of the game to kindle the unexpected encounters both in mind and as places. By focusing on 'the imagined home', the players negotiate and observe each other's intimate and utterly frail imageries.

The spatial language

Games start with the seduction of the rules, which initialises the play and enables the game to deploy its reality (Sicart, 2014). In o2: U E, there are 9 pieces and the game board is an incidental grid. The pieces symbolise tactile experiences, feelings and spatial identities and are; delusion; dull; expectation; layer; memory; mass; immanent; first encounter; void. Players use the same set and need to negotiate how to use the pieces. There are few rules and talking is forbidden. Throughout the play, the two imaginaries intertwine. I define this as an unconscious negotiation play. While what you are designing is only known by you, your imaginary home multiplies its meaning in the other's narrative.

Language already resides at the threshold of our imagination because of the meanings it triggers (Lacan, 2006). And, a conversation is a mutual construction. It is built up as we communicate with each other and meet in our individual ways. I choose to use these pieces in the game to create a spatial language where it is possible to start a conversation solely rooted from our imagination. Freud says the dream element is a horde of images that act like a charade of equivocal words (Grosz, 2005). When playing, the pieces of the game should be treated similarly. The conversations of the game produce an aggregate of circumstantial images. The further research of the game is to treat these conversations as the diagrams of the spatial language.

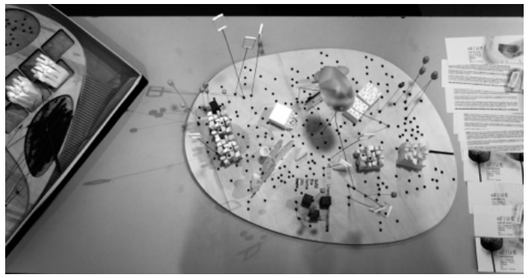


Image 1. 'Unexpected Encounters with someone I do know', B. Almaç 2016.

An Imaginary o2: UE

- You understand that this is a game where you need to build the home you imagine.
- At first, you recollect your dreams and wish to build it. You look through the pieces. There is something peculiar under their happy, trivial appearances. The meanings are equivocal.
- You begin to reflect on your fragile imagination of the home you have on mind. You unravel 'the others' –the unwanted, the buried– of your imaginary home. You would not want this.
- Now, you know the pieces. You begin to build the home you imagine – or fear of. After your first move, you wait for the other to play. Now, you understand that the other fails to interpret what you are imagining. You want to comment on their move, but you cannot. You are not allowed to.
- You understand that you have to negotiate for the home you imagine. You begin to focus on your observation of the other.
- Then, the board becomes a place where you are forced to communicate about the home you dream of.
- You try to manipulate the conversation. Now the home you imagine becomes something other.

Conclusion

Playing is a fugitive threshold. It tends to create unexpected relations that force us to meet our imagination at an unknown level. Moreover, to meet someone by playing is different than a normal meeting where we act to impress; because you play to abandon your habitual self-controlling acts.

o2: U E roots from two distinctive approaches in chess, which are tackling with the encounters of opponents in play. In the game, players create diagrammatic models of 'the home' they imagine against and with each other. Therefore this game compels designers to negotiate their innate imaginations with an open-ended imaginary conversation. This is aimed to question how 'place,' 'placelessness' are constructed and interpreted through our innate creativity and create a spatial language that results in the unexpected narratives of the notion of domesticity.

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Speaking of design experiences: a phenomenological unquiry into everyday aesthetic discourse in design representation

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ABSTRACT

This project exhibits an experimental art installation as one of the deliverables of our interpretive study on design creativity. Our study aims to understand how designers assign meanings, inculcate memories and personal stories into their design identity as a 'life project'. The idea of this art installation is inspired by a set of phenomenological interviews with a group of international textile designers and fashion artists as well as a series of observations in several wool felting workshops with a group of Hong Kong-based fashion design students. The art installation visually documents the flow of experience, ideas, and production during the design process. Interactions and dialogues between designers and materials, ideas, lived experience are also presented through documentaries as a part of the art installation. Our research findings and interpretations showcase three aesthetic themes, namely 'feeling the material, feeling your design', 'design as an introspective process', and 'design as co-creation of social experiences'. The key contribution of this research is the illustration of the link between designers' aesthetic discourse in everyday life and their personal narratives during the design creation process. More importantly, we demonstrate the possibilities of translating interpretative findings to art installation in the field of fashion and textiles design.

Keywords

phenomenology, design experiences, design representation

INTRODUCTION

Our research team is proposing an experimental art installation as an outcome of an ongoing research study on designer's creativity. How designers create, in the "flow" of the aesthetic experience, has become an important topic in experience-centered design since the stories designers tell in and about their design collection engage an empathic dialogue with the audiences (Csikszentmihalyi, 1996). The design thus communicates not only an idea, but also a representation of persons involved and their feelings, struggles, and satisfaction during the design process. This project follows an interpretive trajectory to understand how designers assign meanings, memories, and personal stories which inculcate their design identity as a 'life project' (Venkatesh and Meamber, 2008).

Literature Review

In the classical understanding of 'aesthetic', Kant (1952) contests that aesthetic experience is based on feeling, in particular to the feeling of pleasure or displeasure. The role of aesthetic ideas is the mediation among ideas, sensibility, and imagination of human capacity. Recent studies posit that aesthetic should be historically specific and connected to the everyday lived discourse with aesthetic objects (Townsend, 1997). People are found to develop an emotional connection with the materiality of design in accordance with their cultural depositions and social actions, which later constitute their self-identity formation, self-expression and presentation, and the co-creation of meanings with social surroundings (Carroll, 2001; Goffman, 1959). Thus, the design representation becomes part of the designers' "extended-self" (Belk, 1988) embodying the lived experiences and their emotions about life and aesthetics. The aesthetic experience connects self-identity formation to the co-creation of meanings among individuals. Creativity, in this direction, performs its societal role of human agency that constantly remolds the structure of the regime of aesthetic meanings. While creativity can be defined as the process of bringing something that is both novel and useful (Sawyer, 2006), it can also refer to a mysterious social process since the creation of meanings in design and art is full of sudden insights that seemingly work at an unconscious and inaccessible level (Schooler and Melcher, 1995). Elements of personality, affect, cognition, and motivation can either facilitate or impair creativity (Amabile,

1996; Csikszentmihalyi, 1996).While previous research proves that individual's differences of personality, affect, cognition, and motivation can either facilitate or impair creativity in the design process (Sawyer, 2006), our phenomenological inquiry demonstrates the link between designers' aesthetic discourse in everyday life and the personal narratives during their design creation process.

Methodology

The idea of the art installation was first emerged at the sharing session among a group of international textile designers and fashion artists who participated in the 8th International Shibori Symposium in Hong Kong. Since then, our research team conducted several phenomenological interviews with international designers and artists to obtain their emic description of their aesthetic experiences in everyday life and for their design creation (Thompson et al., 1989). Interviews were conducted in a non-directive manner with a life-history approach, which encouraged a more comprehensive descriptions of the participants' lived experiences, memories, personal stories, feelings that related to their formation of 'design identity' as well as the aesthetic judgment and attitudes. Inspired by these international designers, the research team experimentally replicated the research design by inviting some Hong Kong-based fashion design students to participate in several wool felting workshops, in which the knowledge of fiber properties and basic techniques of wool felting were introduced and practiced. More importantly, the students were encouraged to focus on their design experiences with the materials, and documented their feelings and ideas throughout the design process. All interviews, art works, and photographs were documented for data triangulation and hermeneutic analysis.

Key Findings

Three themes were emerged from our interviews and workshops. Our first theme, feeling the material, feeling your design, affirmed how designers subjectively and emotionally attached to the material and the importance of sensorial engagements during the design process. Many designers ascertained that they "worked with" and "were guided by" the material during the design process. The designers continually followed what they were seeing and reacting to each step as the materials unfolded. New techniques and design ideas were then emerged and that constantly changed the designers' original ideas about their creation. The interaction between the designers and the materials became important for design inspirations. The bodily experiences of 'seeing' and 'touching' of materials allowed free flowing of design imagination, recalling designers' aesthetic experiences, and stimulating the feelings and memories. The second theme, design as an introspective process, addressed how designers engaged in a dialogue within themselves through associating the bodily experience with their emotions, feeling, and memories. The aesthetic experience constituted the formation of 'design identity' with personal notion of aesthetic judgment. More importantly, it intertextualised the design experiences with the narratives of the development of well-being. During the interviews, many design professions saw design process as a way to reach their own limit of design capacity and to search for ways to breakthrough. The third theme, design as co-creation of social experiences, highlighted that the dialogues with the immediate social surroundings were considered as valuable during the design process. Our findings showed that many designers emphasised that the Otherness provided external motivations and more sources of design inspirations. During the wool-felting workshops, the design students kept having casual conversation with their classmates on topics unrelated to design. Rather than focusing on their design individually, most the students grouped together and consciously took references to others' work in their own creation. The workshop thus facilitated a co-creation space of design experiences shared by the students.

Conclusion

Based on our research findings and interpretations, the research project exhibits a new form of knowledge translation. In summary, our research is exploring the possibility of translating interpretative research findings to art installation in the field of fashion and design. The key contribution of this research is the illustration of the link between designers' aesthetic discourse in everyday life and their personal narratives during the design creation process. More importantly, we demonstrate the possibilities of translating interpretative findings to art installation in the field of fashion and textiles design.

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Reprojecting autoprogettazione? Experimenting with the experiment

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ABSTRACT

The summer practice of Product Design students has re-projected Enzo Mari's Autoprogettazione? (1974), which was one of the earliest yet finest examples of detailed - and open- documentation of design and production processes.

What made us select Autoprogettazione? As the subject of design practice is that its method of interaction and open distribution of design and production knowledge makes it a precursor of open design. We think that Autoprogettazione? Emerged as a radical example with its open documentation and feedback qualities, foretelling today's open source design platforms.

One of the unique outcomes of this project was the holistic and experimental approach to design by today's production possibilities. The main purpose was neither the reproduction of an old product, nor using the design of the object as a tool for self-expression. We believe in an environment where traditional, industrial and post-industrial modes of design and production are not separated -categorically, physically and mentally- from each other. Only if this environment is enabled, these different modes can regain function, where they serve the designer to develop her own unique design mentality and ideas about the essence of the object and the precision of the form by derivation and experimentation.

We are inclined to use all the possibilities of open design, our proposal for the exhibition is to ship the recipe (design blueprints) and manufacture/assemble the products in situ for the exhibition.

Keywords

open design, co-creation, design education

Description

The summer practice of X Product Design students has re-projected Enzo Mari's Autoprogettazione? (1974), which was one of the earliest yet finest examples of detailed documentation of design and production processes.

Mari's furniture, designed with simple, standardised pieces and joints are characterised with their ease of manufacture and cost reduction. Our students re-projected and modified these open design objects with the contemporary production methods (such as CNC machining).

Optimised nesting and interlocking systems enabled the reduction of raw material, joint elements and hardware. The furniture are produced in true-to-scale, where the design and manufacture processes are documented in detail and the outcomes are exhibited in a domestic setup.

According to Enzo Mari, form is definitive in every design process and should enunciate a precision relating to the essence of the object. The object is a part of an argument, an extension of ideology, however it cannot be a sole mean of self-expression. Form cannot be defined according to some functions, for the functions are endless. At this point, archetypes are encountered as formal outcomes of fundamental technologic limitations and material requirements, and because they are not blurred by personal spectacles, they can be taken as reference for the essence of the object.

Paola Antonelli describes Mari as forever argumentative, indisputably provocative and always engaged. Mari's discourse about the essence of the object, opening up a new area of debate as a designer urged us to re-evaluate his project as an archetype and a tool of hands-on learning in our search for the direct complement of form and essence of the object through his investigation of material, production process and technology.

What made us select Autoprogettazione as the subject of design practice is that its method of interaction and open distribution of design and production knowledge makes it a precursor of open design, although Mari himself has stated that he is sceptical about the issue. We think that, in a time when open source design was inexistent, Internet was still ARPANET and its contemporary structure was still a far possibility, Autoprogettazione? emerged as a radical example with its open documentation and feedback qualities, foretelling today's open source design platforms.

From this vantage point, this project facilitated a convenient base for our summer practices in X University, Department of Industrial

Product Design, focusing on open design and digital production technologies. Mari's furniture became tools in the exploration of possibilities of various production methods, investigation of the fundamental principles of structure and development of a critical position towards the designed object. In this three-week project, six Autoprogettazione? furniture was interpreted and produced in live scale, according to digital production principles, for instance interlocking joints instead of hammers-nails and nesting methods optimised for CNC cutting, where design and production processes were documented in detail.

One of the unique outcomes of this project was the holistic approach to design by the today's production possibilities. The main purpose was neither the reproduction of an old product, nor using the design of the object as a tool for self expression. Here, taking an already 'designed' product as an archetype and tool for learning facilitates an alternative/critical approach about form and design as well as setting a different starting point different from an otherwise direct or reflective process of design. On the other hand, this project can be seen as an introduction for developing familiarity towards various analogue and digital tools of production. We believe in an environment where traditional, industrial and post-industrial modes of design and production is not separated - ategorically, physically and mentally- from each other. Only if this environment is enabled, these different modes can regain function, where they serve the designer (candidate) to develop her own unique design mentality and ideas about the essence of the object and the precision of the form.

Thematic Statement

In order to think of the nature of objects together with the lives of those who live in a household and making sure there is no separation between designed inside and outside, we do not think there is any other way than redesigning over and over. Going off of that, using today's open design and production possibilities, we reproached the Autoprogettazione? Project that suggests a radical approach in terms of process.

Images of the Display Items



A selection of this collection will be displayed according to the restrictions of the exhibition space.

Video Documentation

https://vimeo.com/168316157

Technical and logistical requirements

We are inclined to use all the possibilities of open design, our proposal for the exhibition does not involve shipping of finished products to the conference but the recipe (design and production documentation) and manufacture/assemble the products in situ for the exhibition.

What we would like to kindly ask you is that whether it is possible to use the production facilities of HKDI for the manufacture of the furniture. If HKDI is interested, we might even try execute this in collaboration with students at the institute.

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Shakespeare mobile digital theatre: an experimental theatrical performance

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ABSTRACT

In order to enhance the diversification of Hong Kong theatrical performance, a new experimental theatrical format, Mobile Digital Theatre, was introduced. First of all, a masterpiece of Shakespeare, A Midsummer Night's Dream, was chosen to be adapted. It was because Shakespeare was a master of literature and his writings were adapted into films, theatrical drama, musicals or other experimental works but not mobile digital theatre. The story of A Midsummer Night's Dream had a lot of virtual and imaginary content that digital techniques could serve the purpose. Then, the original story was adapted into about 15-minutes script. The main theme, reward of love, was attended. Next, location was confirmed, stage design for performance and projection appropriate started, digital visuals were identified, created and produced. Digital techniques such as Photoshop, projection mapping, Illustrator, Maya, After Effect, Flash, Element 3D, and Q-Lab etc. were used to produce the digital images. Technical issues were tested, performers were selected. Based on the script, music was composited. Practices of performers and musicians were followed. Finally, all were integrated, rehearsed and performed.

A Mobile Digital Theatre allows more imaginary images to be expressed. In addition, the stage should be portable and the performance is accessible. However, high financial expenses are required and more time is needed.

Lastly, "mobile" digital theatre should ensure same visuals and stage setting which can fit into different environments of performances.

Keywords

mobile, theatre, Shakespeare

Aims & Objectives

Despite the long history of theatrical performance in Hong Kong, the majority was based on the traditional forms of theatre. In order to enhance the diversification of local performance, a new experimental theatrical format, Mobile Digital Theatre, was introduced.

Design Method

The concept of Mobile Digital Theatre was used. The stage should have a high mobility for easy access. So, we used digital materials for most of the visual content in addition to the theatrical performance. The method we used was an integration of mobile stage and digital visual content with theatrical performance.

Process

First of all, a masterpiece of Shakespeare, A Midsummer Night's Dream, was chosen to be adapted. It was because Shakespeare was a master of literature and his writings were adapted into films, theatrical drama, musicals or other experimental works but not mobile digital theatre. The story of A Midsummer Night's Dream had a lot of virtual and imaginary content that digital techniques could serve the purpose.

After the story had been chosen, we adapted the original story into about 10 minutes script based on the advice of Dr. ZHANG Chong, a scholar specialised in Shakespeare adaptation of Fudan University. Dr. Zhang reminded that the main theme of the story was reward of love. The main focus should be the theme and not the visual presentation. Then, location was confirmed, stage design for performance and projection appropriate started, digital visuals were identified, created and produced. Digital techniques such as Photoshop, projection mapping, Illustrator, Maya, After Effect, Flash, Element 3D, and Q-Lab etc. were used to produce the digital images. Technical issues were tested, performers were selected. Based on the script, music was composited. Practices of performers and musicians were followed. Finally, all were integrated, rehearsed and performed.

Discussion and Results

Adaptation

The love flower with craving and love feelings towards people was the iconic sign of the story. The artistic director struggled either “heartsease” (to develop love-lotion) or “belladonna” (in Italian, to make people feel psychedelic) to become the iconic flower. Using “heartsease” would respect to Shakespeare’s original choice, however, “belladonna” will be better to illustrate the theme of the story. At last, “heartsease” was chosen for the originality. In order to attract young audience, the dialogues added some local youth colloquial style.

Environment and Stage

The performance venue was at Lee Tung Avenue. It was restricted by the safety regulations of Hong Kong government that the stage could not be higher than fourteen feet. The background of the stage had been considered as white, black or grey. After testing, the environment lights of this venue affected the projected visuals. For the best projection, white was confirmed and two big curtains were required to block the environmental lighting in order to minimise the deteriorations.

The white stage was originally planned to be made of cloth but it was light and could not be stably located. Wooden set was replaced. So, rear projection could not be used, instead, front projection was employed.

Art Direction

In order to lead both performers and audience to enjoy a dramatic evening, a dream forest was created. 3D and special effects were used to express the set and imaginary images. For the opening of the story, an ultra sound smoke machine and digital visual effect of smoke were used to create a dramatic scene. The transitions of scenes could be delivered by software but the images needed to be produced lively during rehearsals in order to fit the actual scale of the stage. Concerning the costume, cream-colored, light blue and so on were used for the best projected colors.

Use of Projection Hardware

From the testing results of digital visual effects, we found that the images on computer screen created were quite different from those projected in the screening room. For example, the tunnel projected did not have enough depth and needed to create another one to enhance the depth of the tunnel.

Another issue was the shadows of performers which blocked the visuals projected in the performance. Also, front projection might have heavy silhouettes. So, the distance between actors and the screen needed to be monitored. Also, we used two side lights to isolate the performers from the background projected. Extra workers were required to manage the lighting effect. If more budget was available, background LED Screen could be used to solve the problem.

Use of Projection Software

Due to the time and financial constraints, we needed to create some alternatives to reach the same visual results. For example, Maya was supposed to be used for animation and 3D modelling. But, time was not enough to build up the 3D models and test the animation effects. So, After Effects was used to complete the tasks. Another example was the 360 degree rotation of the projected background. Special Visual Effects Plug-in was used to simulate the movements but the movements were limited to left and right, and, up and down. Glowing was originally planned to be created by Maya that was also changed to be created by After Effects.

The stage initially designed to have a 2-sided 90-degree background. If we used three projections separately to project on the 2-sided background and the floor, the images were difficult to match and professional software such as Coolux and QLab Pro should be used. However, such system costed more than HK$100,000 and we finally cut the background into 1-sided.

Conclusion

A Mobile Digital Theatre allows more imaginary images to be expressed. In addition, the stage should be portable and the performance is accessible. However, high financial expenses are required and more time is needed.

Lastly, “mobile” digital theatre should ensure same visuals and stage setting which can fit into different environments of performances.


Image 1

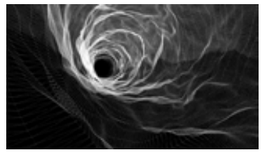

Image 2


Image 3


Image 4


Image 5

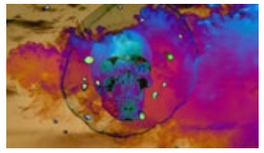

Image 6


Image 7


Image 8

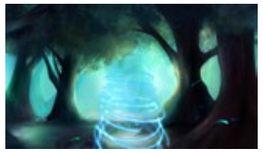

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Image 20

Rituals of care

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ABSTRACT

If we consider the etymology of the word 'ritual,' from early 14th Century Latin ritus, and detach it from its religious context, what we get is a sense of 'observance' taking the form of 'ceremony' but also the form of 'customs' and 'usages;' to be observant of and attentive to a principle or decree manifests itself in the ceremonial as well as in the everyday, in the funerals and weddings as well as in the daily custom of brushing of one's teeth, or the usage of utensils for food consumption.

Taking such notion of ritual as its point of departure, Rituals of Care is an attempt to use a workshop format to map out the foundations of an ethicoaesthetic design practice focusing on the rituals of everyday life and the notion of 'care' in relation to sustainability. First, participants explore the rituals involved in an everyday ritual such as having breakfast by outlining and reflecting upon distinct memories of the breakfast they had in the morning of the workshop. In three steps, participants are then asked to reflect upon and contextualise their distinct memories of having breakfast, keeping the notion of ritual in mind. Second, participants work in groups speculatively designing what rituals are required as we face an increasingly unsustainable future, keeping the notion of 'care' in mind. What rituals do we need to invent - what kinds of attentiveness, what kinds of care - in order to construct universes in which life, in some form, can be sustained?

Keywords

rituals, ethico-aesthetics, sustainability

Description

The proposed workshop, Rituals of Care, is an attempt to map out the foundations of an ethicoaesthetic design practice focusing on the rituals of everyday life and the notion of 'care' in relation to sustainability. First, participants explore the rituals involved in having breakfast by outlining and reflecting upon distinct memories of the breakfast they had in the morning of the workshop. In three steps, participants are asked to reflect upon and contextualise their distinct memories of having breakfast, keeping the notion of ritual in mind. Second, participants work in groups speculatively designing what rituals of care are required as we face an increasingly unsustainable future. What rituals do we need to invent, what kinds of attentiveness, in order to construct universes in which life, in some form, can be sustained?

Theoretical Context

A fashionable term at the moment used to describe the world that we now inhabit is the geological concept 'the Anthropocene.' Although the validity of the concept within geological discourse remains contested, it seems to have become a common albeit loosely defined term for a geological era following the Holocene defined by the (detrimental) impact of humanity - the Anthropos of the Anthropocene - on the geological strata of the planet.

Facing the Anthropocene, what we are called upon to do, is to find other ways of inhabiting our bodies - of being embodied - and other ways of collectively inhabiting the geosphere - of being, in a sense, embedded. This involves aesthetics and ethics; developing sensibilities, forms of attentiveness and constructing, or designing, universes in which life can be sustained. In this task, the notion and practice of ritual, if retuned to face the Anthropocene, may come to play a most crucial role.

If we consider the etymology of the word 'ritual,' from early 14th Century Latin ritus, and detach it from its religious context, what we get is a sense of 'observance' taking the form of 'ceremony' but also the form of 'customs' and 'usages'; to be observant of and attentive to a principle or decree, manifests itself in the ceremonial as well as in the everyday; in the funerals and weddings as well as in the daily custom of brushing of one's teeth, or the usage of utensils for food consumption.

As for the origins of the Latin root itself, it has not been established with certainty. There is, however, a compelling argument linking it to a Proto-Indo-European word for 'reasoning' and 'counting;' two words that both involve a process of thought by which we make sense of the world.

Arguably, ritual today has little to do with thought and reflection, and more to do with habits and traditions, often problematic ones, and with activities that we do precisely without thinking, such as brushing our teeth. It is as if the link between observance, attention, and reflective thought, on the one hand, and ceremony, custom and usage, on the other, has been severed. We are no longer attentive to the rituals that make up the texture of the universes in and through which we live.

Now, our argument is not that we should return to a pastoral or archaic past where this would have been the case but we would like to propose two more speculative questions: First, what if we were to turn our thinking toward the rituals through which we construct a life in order to figure out what it is we are observant of and attentive to in the Anthropocene; what our ceremonies, customs and habitual uses of the things that surround actually mean? Second, what if we were to turn to ritual as a form of practical and speculative thinking in order to figure out how to construct universes for ourselves within the Anthropocene, in which life, in some fashion, can be sustained and enriched?

Ritual would then, perhaps, become the site of an emerging ethics (in the Greek sense [ethos], as having to do with 'habitual character' or 'disposition', or better perhaps, 'ways of living') and an emerging aesthetics (again, in the Greek sense [aisthanesthai], as having to do with aesthesis, perception, or the development of sensibilities and forms of attentiveness). Developing sensibilities and practices of attentiveness, and constructing ways of life on the basis of embodied and embedded, attentive experiences; another word for this might be 'care.'

Care is an interesting word that is often understood superficially in a sense closely associated with the word 'cure.' We care for the ill in order to restore them to health; we care for the poor by easing their suffering; we care for our children by offering them our protection and unconditional love. The two words 'care' and 'cure', however, have very different etymologies. Whereas the word 'cure' stems from a Latin root, cura, meaning 'healing, paying attention to,' the word 'care' has a Proto-Germanic root in a word that bears connotations such as 'lament,' 'loss,' and 'grief.' Residual use of the word in this sense can be found in phrases such as, 'she doesn't have a care in the world.'

Within the context of the Anthropocene, 'care' becomes a very interesting choice of word as the configuration of an ethical, or ethicoaesthetic site for new ways of living is defined by a sense of irrevocable loss. We live through a period of likely extinction that will require us to fundamentally rethink our understanding of what it means to be human beyond the Anthropos. What we stand before, then, is the task of finding out what it may mean to live a certain kind of extinction. This is an ethicoaesthetic task, and it is one premised on a sense of loss. We do have a care (a loss, a grief, a lament) and we do need to start caring for (paying attention to) the geosphere within which we construct our universes and to those with whom we labour in order to do so. This involves practicing 'care' and not least experimenting with the design of rituals of care.

Details

Duration: 3 hours, 2pm - 5pm
Target Audience: academics, professionals, students
Expected number of participants: 8-10 persons

Organiser biographies

Ola Ståhl is a practicing artist and writer with a particular interest in transdisciplinary collaborations and in socially and politically engaged creative-critical practices. He has exhibited, performed and published widely in various international contexts and currently holds a senior lectureship at the Department of Design + Change, Linnaeus University, Sweden.

Sara Hyltén-Cavallius's core concern is to make the world a better place for living creatures, trough social and sustainable design and education. Sara has a background as an architect and is now the head of Department of Design + Change, Linnaeus University Sweden. All our learning through education and research is dedicated to sustainability.

Review of Open Design Activities

As the host of Cumulus Hong Kong conference, HKDI offered an array of Open Design Activities to share local design passion and offer unique experiences of Hong Kong and Chinese cultures to international participants. Seven activities were offered including a special cross-disciplinary activity of designing dim sum at the Chinese Culinary Institute of VTC.













Jade Jewellery Making

Conducted by Mr Eddy Tam, a local jade jewellery designer and HKDI alumni, the activity introduced participants to the basic techniques of jade jewellery-making, and the aesthetics of jade as a prominent material for accessories in China. Each participant had the opportunity to design a piece of jade jewellery.

Miao Embroidery

Conducted by Ms Yeung Ce, an expert in the study of Miao culture and HKDI collaborator, this activity provided participants with an overview into the culture and lifestyle of Miao, one of the 56 ethnic groups in China. It focused on embroidery design application on apparel and accessories with articulations of their symbolic meanings and relevance to Miao culture, traditions and environment. Participants experienced first-hand, through interacting with the master artisan, the creation of a piece of Miao accessory using ethical embroidery techniques, which is a main research area of the Fashion, Image and Design Department.

Chinese Drumming

Conducted by Shum Ho Fung, a professional Chinese percussionist and HKDI alumni, the activity aimed to enable all participants to experience the beauty and fun of Chinese percussion. During the activity, participants experienced different types of Chinese drums and learned different functions of Chinese percussion. As a group, they played short pieces of Chinese drumming patterns and jammed with students from Digital Music and Media department.







Designing Dim Sum

Participants learned from local dim sum masters at the internationally recognised Chinese Culinary Institute (CCI) the secrets to one of the world's favourite culinary attractions. They gained hands-on experience in making dim-sum with coaching on special techniques and flavouring.

Light & Sound Design Installation

Conducted by HKDI alumni Chung Wing Chung, Ngan Yi Ling and Wong Yik Hin Hill, together with Phoebe Hui, HKDI lecturer from Department of Design Foundation Studies, the light and sound installation workshop aimed at extending the possibility of interactive music and light effects, and democratising the creative process. Participants were introduced to the techniques of creating a simple interactive system using Arduino and a range of effectors. Upon completion, the interactive system was displayed on HKDI campus, where the creators and other Cumulus participants, HKDI students, staff and members of the public engaged in an environment of interactive discourse between personalised and public place-making.

Physique as Artefact

An HKDI lecturer from Department of Design Foundation Studies, Phoebe Hui introduced the basics of mould-making and live-casting to create a wearable artefact. This activity aimed at promoting a fruitful and critical debate on contemporary art practices and theoretical issues, such as design with empathy, new economic model driven by the maker culture, and the sustainable design approach. The activity was supported by HKDI staff members David Lee, Brigid Leung and Tiffany Fong.







Open Photo Wall

A special interactive installation was created as part of the reception and Open Design Exhibition. Its aim was to engage conference participants to print out pictures to express their vision of Open Design, which was the theme of the conference. Then they searched for the key words representing their vision and posted the images on the photo wall.

Open Design Tour

On the last two days of conference, three different design tours to Kowloon, Hong Kong Island and New Territories were offered to give participants a quick but in-depth look into Hong Kong's mixed cultures, and the opportunity to appreciate the beauty of Hong Kong from an insider's perspective.



Cumulus Working Groups

ReVeDa (research)

Led by Mariana Amatullo, Lorenzo Imbesi and Loredana di Lucchio

ReVeDA Book: launch of the CfP. an open space to share research experiences in design and art.

Sustainability

Led by Sara Hyltén-Cavalliius, Mathilda Tham and Susan Evans

What Role Can Designers Play in the Vision Towards Sustainability and How As Educators Do We Prepare Them for Success?

The objective of this workshop was to create a space for synthesis and to build on the paper sessions on sustainability, with a focus on design education. What roles can designers play in the vision towards sustainability? What is required of design curricula, pedagogies, educators, academic institutions and wider partnerships to support students adopting these new or modified roles? The workshop aimed to set an agenda for years to come and to create an ongoing 'think and do-tank'. This interactive and action orientated workshop was led by an interdisciplinary group from the Cumulus network and the Cumulus working group for sustainability, representing European and Asian perspectives, and both theory and practice.

The workshop was structured in three consecutive sessions:

- The synthesis of insights from paper sessions & shared examples of best practices.
- The new designer roles at the intersection of curriculum, tradition and emerging socio-cultural, economic and ecological systems.
- Designing: prototypes for integrating relevant and applicable sustainability learning into the design curriculum and academic institutions.

Industry & Innovation

Led by Sam Bucolo and Marjolijn Brussaard

This Cumulus working group aims to better understand and shape the role of design education to match the future demand of industry to innovative within a rapidly changing global economic environment. The changing nature of Design has gained attention from governments to address structural economic shifts brought upon through global financial challenges. Within this context design has been viewed as a mechanism of building resilience within a national economy by driving innovation, productivity improvements and social cohesion.

The working group was started in 2013 in Kalmar Sweden as the Design and Innovation network to address the broader issues addressing the changing nature of design within industry, government and society. After two engaging meetings, it was felt that this topic should be refined to reflect a stronger focus on the role of design within industry to support innovation. To reflect this change the working group has been retitled Industry and Innovation.

The revised Cumulus network aims have also been updated to reflect to bring together a global network of academics, educators and practitioners to share and explore approaches and challenges to the repositioning of 'design' as a downstream operational activity to a driver of strategic value at an organisational level. The network will aim to complement the activities of various National research programs investigating the role and value of design by framing the educational implications to enhance innovation within industry through design.

Specific questions that the working group will aim to address include:

- What will be the emerging design education content to enable industry to address structural economic shifts and remain globally competitive?
- What is the ideal balance between design, science, art and business education to address issues relating to industry and innovation?
- What are the emerging industry engagement frameworks to enable design capability to be embedded within firms to enhance innovation?
- What are the education challenges to prepare design gra dates to operate within this context?
- What exemplars projects exist and what forums should these be shared in?
- How can this group provide input to influence regional and global policy?

Fashion & Textiles

Led by Piret Puppart

Ethnography as a source of inspiration - TOUCH MATTERS
Smartphones and touchscreens have become the norm. Countless images pass under our fingertips, influencing our daily search of inspiration. But as we swipe the sheer glass screens of our high-tech gadgets, we tend to forget that there is real touch. The real touch of a texture or a surface can trigger an unexpected dimension of creativity. This is especially important when working with ethnographic discourse, as the interaction with old materials tends to be quite superficial amongst students. Outside museum archives, the opportunities for students to hold historic objects in their hands are becoming increasingly scarce and can therefore be an obstacle to this type of inspirational trigger. The aim of the TOUCH MATTERS workshop was to discuss the possibilities and experience of touch currently available through your universities for ethnography-related courses. We also discussed the methodologies behind the course that ensure an ethical outcome. The Estonian Academy of Arts shared its extensive experience of sending art and design students on expeditions to Finno-Ugric minority groups for almost 40 years and working with collectors of traditional clothes and textiles.

As an end goal, students mapped the ethnographic 'hotspots' offered by their universities, which resulted in an interactive website. This process encourages possible future collaborations between students and universities interested in that field.

Leadership & Strategy

Led by Elsebeth Gerner-Nielsen assisted by Eija Salmi, Annette Flinck

Our dynamically changing complex society requires new mindsets, approaches and solutions. As Cumulus school leaders our responsibility is to inform and influence our surrounding global society so that our knowledge and solutions have impact and become rapidly diffused.

We will do our utmost to create the best educational frameworks, to establish excellent conditions for creative knowledge production and diffusion, for our students and stakeholders.

Cumulus Digital Culture

Led by Frederic Degouzon

Augmented Realities: Digital Culture in Hong Kong The Digital Culture experience was back in Hong Kong for a new session, after a three-year break since last meeting in Dublin (November 2013). The session was open to all educators, students & researchers interested in the field of digital media, Interaction design and UX design. The philosophy of the session was to meet up with local designers, practitioners, academics and researchers, and to get the vibe of what's happening in one the most lively hub of tech, business and art in Asia. The program (under construction) will mix up experiments in the field of augmented & virtual reality, business feedback from prestigious UX design firms and a vision of digital design education issues.

Website: http://www.cumulusdigitalculture.net

Participant's Feedback

We all had a very rewarding experience at HKDI, the conference being very well organised and providing lots of opportunities for fruitful exchange on issues of experimental design practice, research and education. The theme of the conference, 'Open Design for E-very-thing — exploring new design purposes' also reflected the current repositioning of design in relation to a rapidly shifting economic, political and social landscape, where new openings are both challenging and necessary. Our contributions ranged from chairing a session on 'open experiment', discussing the impersonation of the designer-researcher-participant, pondering on how to cope with contingency, presenting experiences of olfactory game design and highlighting the ethical challenges of designing with vulnerable groups.

Professor Maria Hellström Reimer, Dr Clint Heyer, Dr Elisabet M. Nilsson, Dr Simon Niedenthal and Dr Åsa Harvard Maare
K3, Malmö University, Sweden

…The conference was well-organised, the 'Open Design for E-very-thing' topic was a good choice since it left a wide range of interpretation and was equipped with interesting speakers. The open approach of the topic was attractive for different design disciplines as well as for design practice and theory. Attending some of the parallel sessions showed the diversity and relevance. Both, the opening and the closing keynotes showed high quality in both lecturers and topics. Especially I like to mention the contribution of Patricia Moore…

Professor Michael Krohn
Zurich University of the Arts, Switzerland

Linnaeus University was proud to be partners at the HKDI Cumulus Conference 2016. The conference was a success. It was in the expected Cumulus format but had additional layers of experiences… We were involved in many ways, as chairs and in support, and were struck by the efficiency and how well the proceedings were conducted… The core of our department is sustainability and during this conference we had many opportunities to listen to papers, to discuss and participate in workshops within sustainability. Our involvement in the conference have deepened our relationship to HKDI and been a source of inspiration to our department´s development.

Sara Hyltén-Cavallius
Linnaeus University, Sweden

… We found that the Open Design conference concept with mixed formats and collaboration among the HKDI and the international partner institutions was fruitful and matched the Cumulus network well… We found that the conference session was well organised and that accepted submissions generally had a high quality compared with earlier academic Cumulus conferences, so by the end of the day our expectations as a conference partner were fulfilled, and we were thus happy to be part of this event as partners and academic participants…

Dr Troels Degn Johansson
The Royal Danish Academy of Fine Arts,
Schools of Architecture, Design and Conservation

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