

Cumulus Conference Proceedings Wuxi 2018

Hosted by:

Cumulus Association / Jiangnan University

Diffused
Transition
Design
opportunities



Cumulus Conference Proceedings Wuxi 2018
Diffused Transition & Design Opportunities

31st October-3rd November, Wuxi, China

Editors

Zhang Linghao, Lam Yanyan, Xiao Dongjuan, Gong Miaosen, Shi Di

Art Director & Designer

Zhu Qiyang

Layout Designer

Yan Chenxi and Song Yuyin

School of Design, Jiangnan University
No.1800, Lihu Avenue, Wuxi, 214122 China
<http://sodcn.jiangnan.edu.cn>

Cumulus International Association of Universities and Colleges of Art, Design and
Media
Aalto University
School of Arts, Design and Architecture PO Box 31000, FI-00076 Aalto
Finland
E: cumulus@taik.fi
W: www.cumulusassociation.org

© Copyright: School of Design Jiangnan University, Aalto University School of Arts,
Design and Architecture and the Authors

All content remains the property of authors, editors and institutes ISBN:

978-952-60-0092-3

Printed in Wuxi, China. October 2018

Printed by Wuxi Huguang Elegant Print Co.,Ltd

ISBN 978-952-60-0092-3 (print)

ISBN 978-952-60-0091-6 (pdf)

ISBN 978-952-60-0093-0 (ePub)

Contents

Welcome from Conference Chair.....	1
Cumulus Association.....	3
Cumulus President’s Message.....	4
School of Design, Jiangnan University.....	5
Cumulus 2018 Wuxi Conference.....	6
International Reviewer Board.....	7
1. Emerging design research and practices.....	10
Academic Papers	
Research on the Innovative Mode of Intelligent Integration of Clothing Industry.....	12
<i>Zhang Xiying and Shen Lei</i>	
When Fashion Meets Technology—Responsive and Personalized Design for Fashion Bag	21
<i>He Shuang</i>	
Research on sound design for urban rail transit voice broadcasting based on EEG technology.....	31
<i>SHAO Jiayu, Zhu Wen and Chen wenqing</i>	
Rethinking Mainland China Educational Systems Through Service Design Approaches	42
<i>Yelena Tsopa and Xin Xiangyang and Vittoria Daiello</i>	
Study on Materialized Experience of Intangible Cultural Heritage in Museum Perspective: Take the Patterned Band Weaving Handicraft of the Miao Nationality of China as an Example.....	53
<i>Miao Liu and Eiko Sowa</i>	
A values-based direction: overcoming an imbalanced relationship between the designers and craftspeople.....	63
<i>Wanlin Zhang and Stuart Walker</i>	
Design thinking for public good: moving towards change?.....	75
<i>Arianna Vignati and Mariana Fonseca Braga</i>	
Cultural Transition & Design Opportunities: A Research on New Pattern Design of Traditional Chinese Indigo Printed Fabric.....	88
<i>Dong Li and Fei Shen</i>	
Relationship Quality in Collaborative Service Encounters: A study of the factors affecting the pleasure of temporary team volunteers.....	98
<i>Yang Zi, Gong Miaosen and Zhang Li</i>	
Transition to Digital Manufacturing: generating product opportunities with authentically ‘post-series’ design.....	99
<i>Loredana Di Lucchio, Viktor Malakuczki and Alex Coppola</i>	
Endogenous Creative System Based on Rural Cultural Resources.....	125
<i>Youyu Jiang, Xiaolei Min and Tie Ji</i>	
Research on Interactive Design of Intellectual Training Products for Elderly Based on Multi-sensory Experience.....	134
<i>Tingting Wang and Dongjuan Xiao</i>	

Docu-design : decrypting present-day through design.....	144
<i>Elizabeth Hale</i>	
Designing acculturated phygital experiences.....	153
Francesco Zurlo, Venanzio Arquilla, Gianluca Carella and Maria Cristina Tamburello	
Mapping of the Competitive Advanced Models and Services in Cultural and Creative Industries.....	165
<i>Xue Pei, Arianna Vignati, Renato Ocone, Claudia Pinna and Monica Rossi</i>	
Teaching E-learning Advanced Program for Visually Impaired Students.....	177
<i>Theresa Lobo</i>	
Situation-Centered Automotive Cluster UI Design for the 'Passenger' in Self-Driving....	188
<i>Hyunji Kim and Eui Chul Jung</i>	
A Research of Innovation Opportunities in Future Museum Design.....	204
<i>Duan Wu, Chenxi Yao</i>	
On the Innovation of Design Management in the Internet Age----A Case Study of D9X Social Innovation Lab.....	220
<i>Chi Zhang and Jiajia Song</i>	
Experience-based Co-design for Improving Hospital Experience by Mobile Application	229
<i>Wenjie Wang and Dongjuan Xiao</i>	
Professional Proposals.....	240
Facilitating a Growth Mindset of Creativity for Adults Using a Game Design Approach.	241
<i>Shasha Yu, Elizabeth B.-N. Sanders, Peter Kwok Chan</i>	
Research and Application of Peking Opera Costume Craftsmanship—Taking the Application of Scraping Paste Process in Fashion Design as an Example.....	248
<i>BiRan and LiWei</i>	
Feasibility Research of Business on Community Micro Regeneration, A UniHub Distributed System Perspective.....	255
<i>CHEN Fan, MA Yu-Hong, QIAN Li</i>	
Designing places for cultural landscapes in transition.....	260
<i>Agnese Rebaglio</i>	
Collaboration and Co-creation: A study on the design strategy of the enabling problems of moderate adult intelligence and developmental disabilities.....	269
<i>Zheng Binbin ,Yang Zi and Gong Miaosen</i>	
Study on Interaction Design of Electric Vehicles Based on PACT(A\C) Theory.....	281
<i>Weng Chao , Zhang Yelei and Gong Miaosen</i>	
"Secondary Design"—Analysis of Methods and Practices in Artist Derivative Design	286
<i>YangJin</i>	
The digital experience and sustainability of the museum.....	294
<i>Wu Qiong</i>	
Extreme tendencies and individual consciousness in Chinese contemporary art jewellery	302
<i>Zhilu Cheng and Jun Hu</i>	
2.Evolution and continuation of design education.....	311
Academic Papers.....	312
Study on Multi-specialty Integrated Design Course for Master of Fine Arts of Design Discipline.....	313
<i>Liu Jia and Guo Weimin and Wang Xinyi</i>	
Transforming Intercultural Textile Teaching Culture – A Method Approach.....	326
<i>Brigitt Egloff and Tina Moor</i>	
Research on Evaluation of Industrial Design Education Competitiveness in China.....	340

<i>XU Jiang, Chu Jia Rui, Ou Xifan, Gan Xiang</i>	
An Authentic Teaching Strategy of Merchandising-Learning Content to Deliver a Standards-Driven Design Curriculum.....	353
<i>Juan Du</i>	
Future Pathways for Design-Driven Entrepreneurship Education.....	365
<i>Rhea Alexander and Vinay Kumar Mysore</i>	
A Day of a Blind People—Complexity and Conflicion In Design.....	379
<i>Xiong Yi and Zhao Quanquan</i>	
Integrating ownership and entrepreneurial mindset in design education.....	389
<i>Harshit P. Desai</i>	
Images of Compromise: investigating the projected identity of UK art schools through visual representations.....	402
<i>Yanyan Liao and Tom Fisher</i>	
Creativity through interdisciplinary environments—improving innovation in students’ teams	413
<i>Miguel Salinas</i>	
Enhancing student experience in design education through participatory design methodology.....	425
<i>Yang Lili, Zhou Zhiyu, Xin Xiangyang, Yu Chengcheng, Han Yu</i>	
Design Thinking as new leverage for Entrepreneurship Education.....	439
<i>Arianna Vignati and Gianluca Carella</i>	
Providing a Project-introduction Design Curriculum.....	454
<i>Tianxiao Xie and Qingman Wu</i>	
Involving user perspectives in architectural design through scenarios: Lessons learned with students designing a co-working space.....	461
<i>Valerie Van der Linden, Sarah Flebus, Mauro Poponcini, and Ann Heylighen</i>	
Explore Learning by Design (LBD) in Chinese Primary Schools: A Case Study from Beijing, China.....	475
<i>Liang Yin, Wei Liu, Yancong Zhu, Davide Fassi, Jing Zhao and Anran Qin</i>	
Transforming the Traditional Chinese Classroom: A Case Study of Tongji-Huangpu School of Design and Innovation.....	484
<i>Yubei Gong, Yongqi Lou</i>	
Building Up a Mindset of Design for Sustainability.....	497
<i>Xiaocun Zhu and Pius Leuba dit Galland</i>	
Professional Proposals.....	510
The Proposal of Design Education to acquire Design Thinking using Origami Architecture and Digital Fabrication.....	511
<i>Tomohisa Gokoh Seiichiro Matsumura Tadashi Sakai</i>	
3.The change and certainty of design discipline.....	518
Academic Papers.....	519
Form follows experience: Research on product morphological design.....	520
<i>Yang Lili, Xin Xiangyang, Zhou Zhiyu, Han Yu, Yu Chengcheng</i>	
Research on the Construction of Knowledge Map of Design Theory and Method - Based on the Perspective of Natural Science Foundation of China.....	532
<i>Ou Xifan and Xu Jiang, Sun Gang, Xu Jingyu</i>	
Anchoring Design Transitions with Case Studies.....	542
<i>Andrew Shea</i>	
Originality in Design. The needed discipline for Fashion Designers.....	556
<i>Jewellyn Alvares</i>	

4. Interdisciplinary integration and design position..... 562

Academic Papers..... 563

Future Retail for Kids: Emerging Changes and Design Opportunities.....	564
<i>Xue Pei, Arianna Vignati, Luca Fois, Renato Ocone and Michele Melazzini</i>	
An Parametric Analysis on the Spatial Texture of the Historical Block—Taking Nanjing Lotus Pond as an Example.....	573
<i>Zhang Chunxia , Guo Weimin , Xie Jinzhi</i>	
Reaching a Million.....	589
<i>Ebba Lindgren</i>	
Metaphor, Rhetoric, and Design: Creating Meaning through Re-recognition.....	608
<i>Zhu Liand Xin Xiangyang</i>	
Research on intelligent clothing design and sustainable design for the elderly.....	617
<i>REN Xiangfang and SHEN Lei</i>	
CO-DESIGN: AN INTERDISCIPLINARY-DIALOGUE PLATFORM TO RECONSTRUCT OLD COMMUNITIES.....	626
<i>Zhang Bowen and Guo Weimin</i>	
From “Cure” To “Take Care”: A Design Interdisciplinary Approach in the Care of Dementia.....	637
<i>Silvia Maria Gramegna and Alessandro Biamonti</i>	
Research on Creation of Positive Environment Based on Positive Psychology.....	647
<i>Liu Runze and Zhou Haoming</i>	
Digital Archive as a Creative Booster. Connecting Design Processes to Logistics and PLM Platforms.....	651
<i>Gabriele Goretti, Elisabetta Cianfanelli and Margherita Tufarelli</i>	
Engaging Practitioners in Interdisciplinary Collaborative Design Studio Courses to Advance Practice and Pedagogy.....	667
<i>Peter Kwok Chan,Rebekah Lynn</i>	
Design-led Interdisciplinary Research for Social Innovation.....	679
<i>Lisa E. Mercer</i>	
CAMPO: Towards an Open [democratic] and Adaptive User Centered Data Management as an alternative to traditional Market Research in Housing [serial] Design.....	687
<i>Raiza Barrera Vega</i>	

5. Sustainable vision and design challenges..... 700

Academic Papers..... 701

Smart vehicles.A design contribution for the changing urban mobility.....	702
<i>Elisabetta Cianfanelli, Gabriele Goretti , Margherita Tufarelli</i>	
From scarcity-induced creativity to sustainable fashion practices: repurposing the Soviet DIY for today.....	714
<i>Simona Veilande and Emils Rode</i>	
Optimization Strategy of Urban Public Bicycle Service Experience under the Impact of Bicycle-sharing.....	727
<i>Lou Ming Zhang Ling-hao and Zhang Qing</i>	
Nanghai Food Stories. Edible Explorations of a Place in Transition.....	737
<i>Serena Pollastri, Maria Alejandra Lujan Escalante, and Tong Meng</i>	
From “The Limits to Growth” to Systemic Design:envisioning a sustainable future.....	751
<i>Peruccio Pier Paolo, Vrenna Maurizio, Menzardi Paola and Savina Alessandra</i>	
Analyzing the Creative Element of Upcycling in Design Education.....	760
<i>Qiu Dengke, Peng Jinqi, David Bramston, Qiu Zhiyun , Wei Rui, Li Yuanxin</i>	

Cup-Sharing Service Design Model for Campus Cafés in South Korea to Reduce Disposable Consumption.....	773
<i>Eui-chul Jung , Gahyung Song, Youngeun Lee and Minkyung Kim</i>	
Time Unbound:Inter-weaving Cultural Craft and Design with a Vision for Sustenance..	786
<i>Manpreet Kaur and Ruchira Bahl</i>	
Touch of Genius: traditional craft, its relationship to place, culture and nature, and design praxis.....	799
<i>Louise Mullagh, Stuart Walker, Martyn Evans</i>	
Thermal Comfort Analysis of Winter Micro-environment in Beijing Cuandixia Traditional Courtyard.....	812
<i>Zhou Haoming, Nong Limei</i>	
Professional Proposals.....	824
The Respective Roles of the Government, Citizens and Academics in the Sustainable Development of Tamba Nuno.....	825
<i>Eiko Sowa</i>	
Research on the Space adaptability Transformation of stilted Building in Xiangxi Countryside based on the Mode of Family Endowment.....	830
<i>First Author Lu Yuechi</i>	
6.Global transition and local design response.....	837
Academic Papers.....	838
New Nordic graphic design: the balance between Scandinavian traditional crafting and globalization 3.0.....	839
<i>Margaret Rynning</i>	
The Impact of Globalization on Local Scripts.....	851
<i>Randa Abdel Baki</i>	
Research on the Elderly-Oriented Renewal of Traditional Vernacular Dwellings in Xiamen from the Perspective of Social Integration.....	863
<i>Maiqi Lin and Huifang Shang*</i>	
Design Supporting the Regional Transition towards a Circular Economy.....	875
<i>Maarit Virtanen, Kristiina Soini-Salomaa and Mirja Kälviäinen</i>	
Constitution Analysis of the Interior Culture of the Qiang People’s Zhuangfang.....	893
<i>Zhou Haoming, LIU Wei</i>	
Crossing Design: Italy-China as a Design-Driven Language.Joint research labs in between Chinese and Italian cultures on high-end manufacturing through a design driven perspective.....	898
<i>Gabriele Goretti, Ruquan Yang and Elisabetta Cianfanelli</i>	
Research on the Interest of Museum Exhibition Design in Globalization 3.0.....	912
<i>Chen Lin</i>	
Gene Mapping Design for Ethnic Costume: Taking the Taroko Patterns in Hualien as an Example.....	918
<i>Ti Zhou and Hui’e Liang</i>	
Design Intervention and Social Innovation Based on Dong Minority’s Food Culture.....	928
<i>Yinman Guo, Tie Ji, and Juncai Chen</i>	
Notating Engagement in Cross-Cultural Design Activities.....	936
<i>Nick Bryan-Kinns, Wei Wang, and Tie Ji</i>	
Communication as a Driver in Bottom-Up Project Implementation—the Case of Shaxi Low-Carbon Mobility Project.....	950
<i>Feiye Xu, Xiaocun Zhu, and Pius Leuba Dit Galland</i>	
Research on the Transformation of Industrial Design Driven by Quantum Theory.....	978

Lan Cuiqin, Zhang Fan, Wei Qinwen

Professional Proposals.....985

Future Craft China: Design Education Bridging Local Cultural Heritage and Global Contemporary Design..... 986

David MocarSKI, Penny Herscovitch, Dan Gottlieb

Sustainable Development: Creating A Virtuous Production-Consumption Cycle..... 997

Jacob Mathew and Fayiqah Halim

Cultivating Conviviality (How to co-create conviviality tools that improve “togetherness” by highlighting specific knowhows of migrants?)..... 1002

Anna Bernagozzi

Examples of New Sustainable Textiles Production in Finland - Small, Local, Open and Connected..... 1007

Pirjo Seddiki

International Reviewer Board

Adam Thorpe	<i>University of the Arts London</i>
Alessandro Aurigi	<i>Plymouth University</i>
Andrea Mendoza	<i>Independent Filmmaker</i>
Anjali Kelkar	<i>Studio for Design Research</i>
Ann Petermans	<i>Hasselt University, Faculty of Architecture and Arts</i>
Annabel Pretty	<i>Unitec Institute of Technology</i>
Armağan Albayrak	<i>Delft University of Technology</i>
Bao Yixi	<i>Jiangnan University</i>
Ben Sweeting	<i>University of Brighton</i>
Benjamin Chan	<i>The Hong Kong Academy for Performing Arts</i>
Benson Pen Sin. Cheung	<i>Department of Design Faculty of Design and Environment, Technological and Higher Education Institute</i>
Brooke Brandewie	<i>University of Cincinnati</i>
Bruce Wan	<i>Hong kong Polytechnic University</i>
Camilla Groth	<i>Aalto University</i>
Carla Cipolla	<i>Federal University of Rio de Janeiro - DESIS Network</i>
Chen Jiajia	<i>Nanjing University of the Arts</i>
Circula Chan	<i>Hong Kong Design Institute</i>
Claus-Christian Eckhardt	<i>Lund University</i>
Craig Vogel	<i>University of Cincinnati</i>
Dong Zhanxun	<i>Shanghai Jiaotong University</i>
Eun Ji Cho	<i>College of Design & Innovation ,Tongji University</i>
Francesca Valsecchi	<i>College of Design & Innovation ,Tongji University</i>
Gong miaosen	<i>Jiangnan University</i>
Guillerma Mendoza	<i>University of Santo Tomas</i>
He Jun	<i>Jiangnan University</i>
Heekyoung Jung	<i>University of Cincinnati</i>
Hu Weifeng	<i>Jiangnan University</i>
Iceman LEUNG	<i>Beijing Normal University - Hong Kong Baptist University United International College</i>
Jeanne-Louise Moys	<i>University of Reading</i>
Joon sang baek	<i>Yonsei University</i>
Junghsen Lieh	<i>Wright State University</i>
Kärt Summatavet	<i>Fenno-Ugria Asutus and Estonian Ministry of Education and Research</i>
Kelvin Tam Ka Fung	<i>Vocational Education Council</i>
Kristin Hughes	<i>Carnegie Mellon School of Design</i>
Kuohsiang Chen	<i>I-Shou University</i>
Lam Yan Yan	<i>Jiangnan University</i>
Li Jie	<i>Centrum voor Wiskunde & Informatica</i>
Li Rui	<i>Jiangnan University</i>

Liang Qiao	<i>Jiangnan University</i>
Liu Xin	<i>Tsinghua University</i>
Ioredana Di Lucchio	<i>Sapienza University of Rome</i>
Lyu Xi	<i>Sichuan Fine Art Institute</i>
Marijke Melles	<i>Delft University of Technology</i>
Martijn ten Bhömer	<i>Xi'an Jiaotong-Liverpool Univers</i>
Martti Raevaara	<i>Aalto University</i>
Masahiro Ishii	<i>Sapporo City University</i>
Ming Cheung	<i>Griffith University</i>
Mirja Kalcianen	<i>Lahti University of Applied Sciences</i>
Nermin Elokla	<i>Helwan University</i>
Nithikul Nimkulrat	<i>Estonian Academy of Arts</i>
Partric Lei	<i>Macao Polytechnic Institute</i>
Peiyao Cheng	<i>Hongkong Polytechnic University</i>
Peter Chan	<i>Ohio States University</i>
QIAN Xiaobo	<i>Jiangnan University</i>
Qifu	<i>The Open University of China</i>
Richard G	<i>Delft University of Technology</i>
Rick Ng	<i>Vocational Education Council</i>
Satu Miettinen	<i>University of Lapland</i>
Shen Jie	<i>Jiangnan University</i>
Shi di	<i>Jiangnan University</i>
Shuk-Kwan(Barbara)Wong	<i>Xi'an Jiaotong-Liverpool University</i>
Sylvia Xihui Liu	<i>Hongkong Polytechnic University</i>
Sylvia Tzvetanova Yung	<i>University of Bedfordshire</i>
Teresa Franqueira	<i>University of Averio</i>
Virginia tassinari	<i>LUCA School of Arts</i>
Vittoria Daiello	<i>University of Cincinnati</i>
Wai Ching Chu	<i>Technological and Higher Education Institute of Hong Kong</i>
Wang Xi	<i>Jiangnan University</i>
Wei Liu	<i>Beijing Normal University</i>
Wei Na	<i>Jiangnan University</i>
Wing C.Lau	<i>Department of Industrial Design, Xi'an Jiaotong-Liverpool University</i>
Xiao Dongjuan	<i>Jiangnan University</i>
Xie wei	<i>Jiangnan University</i>
Xu Juanfang	<i>Jiangnan University</i>
Yen Hsu	<i>The Graduate Institute of Design Science, Tatung University</i>
Yiying Wu	<i>Aalto University</i>
Zhang Jun	<i>Hunan University</i>
Zhang Xian	<i>Jiangnan University</i>
Zhong Fang	<i>Tsinghua University</i>
Zhou Lin	<i>Jiangnan University</i>
Zhou haoming	<i>Tsinghua University</i>

Future Retail for Kids: Emerging Changes and Design Opportunities

Xue Pei¹, Arianna Vignati², Luca Fois³, Renato Ocone⁴, Michele Melazzini⁵

¹ Politecnico di Milano, Italy. xue.pei@polimi.it

² Politecnico di Milano, Italy. arianna.vignati@polimi.it

³ Politecnico di Milano, Italy. luca.fois@polimi.it

⁴ Politecnico di Milano, Italy. renato.ocone@polimi.it

⁵ Politecnico di Milano, Italy. michele.melazzini@polimi.it

Abstract

The industries and sectors related to *kids* are relatively following a traditional development process, which are mainly driven by marketing or technology innovation. How “design”, as a discipline, is acknowledged in this field still remains at the the first and second levels: treating designers and design skills as a way to make graphics and create products. Therefore, this research, from strategic design perspective, aims at understanding the existing problems and emerging needs in the sectors relevant to kids and toys; at the same time, leading a *human-centered approach* to create promising scenarios and concepts for new retail models.

This is an applied design research, which has been supported by leading companies in kids and toys field. The design team has created an integrated methodology to collect and interpret both qualitative and quantitative data. The data collection phase consists of 1) promising case study in retail sector with focus on digital transformation; 2) observation in retail shops of diverse brands (from key players to small business) and important fairs in toys sector; 3) questionnaire to collect opinions from consumers. Finally, the research has generated several findings for building new retail experiences for kids.

Keywords

Retail sector, design for kids, strategic design, product service system.

1. Research background

1.1. Digital impact in retail sector

The huge impact of digital technology in every sector is challenging the traditional way of doing and providing new possibilities to imagine the future. Digital technology is reshaping the human beings' behaviours in different situations. People are able to buy almost everything online or with their mobile phones and make them delivered home. The increasing number of consumers of e-commerce is pushing the traditional retail sector to rethink the meaning of “shopping in physical shops”. And digital technology makes customers to be multitasking, e.g. using mobile digital devices while watching TV which leads to accessing multiple streams of information at the same time (Accenture, 2013 a). Therefore, in the retail sector, consumers intend to collect useful information from different channels and make comparison before they make decision. This is a big change in customers' purchase behaviour, both in the traditional, off-line world and in the “contemporary” on-line retail era. Both of the two ways are being connected by multi-channel retailing presenting a remarkable upside potential in mature and developing markets (Ebeltoft Group, 2012).

Under this big digital revolution, the children's digital market is also developing on this direction.

The convergence of the Internet and traditional channels for kids (especially in the sectors of retail, communication, entertainment) into one seamless package of a service system will further transform this medium (Montgomery, 2002). In these years, it has become a system and network, including communications, marketing, retailing, and cultural medium.

1.2. From toys design to design for kids

Design for kids means putting the kids in the centre of all the activities and along the whole design process. The traditional retail sector and toys companies are considering the role of design in this area much relating to the design of products, e.g. toys and games. It focuses on how the design of interaction between kids and products could contribute to kids' positive growth (Thorsteinsson & Page, 2012). The designers need to have good knowledge on kids' natural characteristics, specific desire and behaviour patterns to create the "right" products. However, nowadays, a single product could not completely answer to the kids' needs. Designing a toy or a product/service for children requests skills to design the **whole system** around kids, consist of diverse **products and services**. Often, products for children have been interpreted as the declination of pre-existing goods, overloaded with signs, functions and colours inserted in a deliberately redundant packaging, or the unmediated reproduction of an adult object. Today technology offers interesting opportunities but often it is not a vehicle of qualified contents able to generate new ways of playing, learning and socializing or stimulating creativity and imagination, but more often it is a self-referential and not suitable for children component. It's crucial to exploit all the potentials and opportunities of technology and markets, putting the child at the centre of any design process and innovation⁶⁴.

2. Research process and initial results

2.1. Methodology

This research is a part of an applied research project, which aims at understanding the state of the art in the toys sector and how retail sector for kids is changing under the impact of digital technology. The research intends to provide guidelines and strategies to companies in toys sector to face these changes, at the same time, to transform the challenges into opportunities. Therefore, this research acts as a bridge to link theoretical background and real markets' needs. With this objective, the research has created a research plan to collect different typologies of data. It started with *case study* to collect emerging and disruptive ideas internationally; afterwards, the research team has conducted *observation (shadowing)* in two different occasions: a) diverse typologies of physical retail shops b) in two toys fairs in Europe; at the end, a *questionnaire* has been distributed to collect parents' opinions and preferences directly. In this chapter, how the three research methods are conducted will be explained in detail.

2.2. Case study

The research started with collecting international cases in the following three areas: a) disruptive retail concepts driven by advanced digital technologies; b) products and service for kids (or their families) supported by digital technology; c) new retail concepts in sectors where the kids (and their parents) are the principle targets. Eventually, 12 cases are selected to be analysed by using the case study canvas. The tool has been created according to the research objective and previous literature review. There are several main elements guiding the case analysis activity. The most essential part is to describe the service offerings and systems, which will clearly present the key services and how the services work (as shown in the example below). There is also one part dedicated to describe brand and communication strategy. Following that part, the analysis also looks at how technology, especially the digital technology, is been used to create service experiences. Moreover, the most significant innovation drivers

⁶⁴ <https://www.polidesign.net/en/ddgio>

are identified to generate insights and lessons learnt for the following steps of the research.



Figure. 1. One example analysed by using case study canvas (illustrated by authors)

All the 12 cases have been individually studied and presented by case study canvas. The analysis helped the research team to generate the first image (idea) about the international trends in retail sector, which will definitely provide references to toys sector. Thanks to the individual case study, it comes up with two main *issues* inspiring the discussion and exploration. One issue is "**the driven factor of innovation in retail shops/spaces**". In some cases, the principle purpose is to provide customer a "smart" and "efficient" shopping experience. All the digital and physical technologies embedded in the shop aim at fulfilling this objective. On the opposite, in other cases, the concept of retail shops moves from traditional meaning, where people try and buy stuffs, to new ones. For example, it's where kids could play with each other, where parents could spend time with their kids and friends, and where kids and presents get personalised services and advices. The other issue has been witnessed among all the cases is "**typology of interaction embedded in the main services and experiences**". One of the essential elements of service and experience is the quality of interaction during the whole service process and experience journey. According to Buchanan (2001), interaction design goes beyond the interaction with digital materials, it refers to all the interactive experience that human beings have with any types of products in a service or system. Thanks to the artificial intelligence, many smart **human-machine interaction** systems have been used to advance shopping experiences. At the same time, in several cases, we have seen the promotion of interaction among human being rather than with machine and technology. The retail shops/spaces are designed as platforms to meet, to make network and to carry out activities together. Eventually, a map driven by these two issues and the identified factors has been created to express emerging trends, strategies and value propositions proposed in different cases.

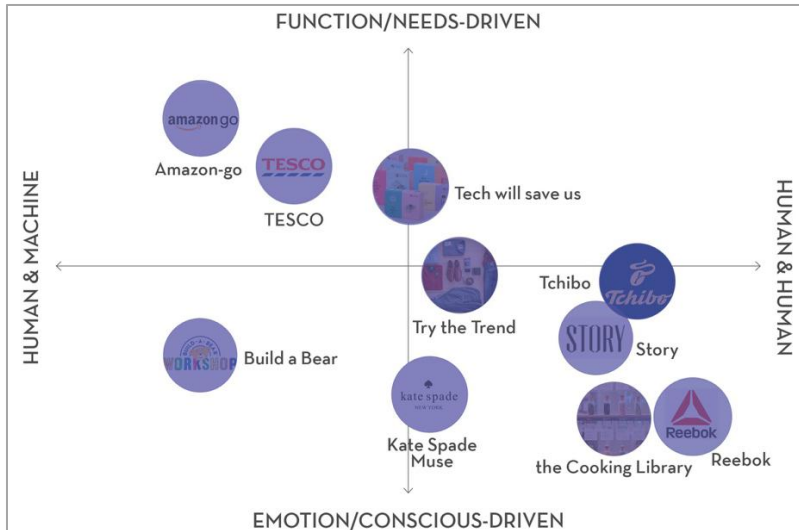


Figure. 2. Map of 12 cases in retail & toys sectors (summarised by authors)

2.3. Observation

Ethnography research has been used to collect data in real and specific contexts, places. Firstly, the research has applied observation (shadowing) method to study different typologies of **retail shops/stores** in the Lombardi region (a region in the north of Italy) through collecting as much as possible first-hand data. This observation activity aims at understanding how the shops and stores are selling products relevant to kids (mainly the toys and games) and how the spaces are “*designed*” to provide shopping experiences. There are mainly four big categories of retail shops have been observed: 1) International retailer of Toys (e.g. Toys “R” Us); 2) Franchising stores of toys brands (e.g. Disney, Chicco and Lego); 3) Hybrid stores that also sell toys (e.g. Auchan); 4) local independent shops. A module (see one example below) for observation has also been generated to collect data of individual shop immediately. The module has mainly divided into four big categories: space; product; activities & service; communication strategies. Eventually, 50 retail shops have been observed and analysed at this phase.

OSSEVAZIONE		2018		SEZIONE ONLINE	
Store Chicco					
Nome e luogo:	Ordine / Disposizione aree	Attività svolte dallo staff		Tipologia di esperienza prevalentemente offerta all'interno del negozio	
	<input type="checkbox"/> Basso	<input type="checkbox"/> Accoglienza		<input type="checkbox"/> Solo di acquisto	
	<input type="checkbox"/> Medio	<input type="checkbox"/> Vendita		<input type="checkbox"/> Ricreativa	
	<input type="checkbox"/> Alto	<input type="checkbox"/> Gioco		<input type="checkbox"/> Educativa e ricreativa	
Dimensioni:	Musica / Suoni	<input type="checkbox"/> Informazioni / supporto		<input type="checkbox"/> Altro:	
<input type="checkbox"/> Piccolo (150 m2)	<input type="checkbox"/> Gara / gioco / quiz	<input type="checkbox"/> Offra un servizio (Es. Lab)			
<input type="checkbox"/> Medio (150-250 m2)	<input type="checkbox"/> Informativo / educativo	<input type="checkbox"/> Altro:			
<input type="checkbox"/> Grande (250-500 m2)	<input type="checkbox"/> Pop music / cantore animati				
<input type="checkbox"/> Super Store (500 m2)					
Colori dominanti	Visibilità	Tipologia di contenuti della comunicazione		Comunicazione dei servizi in store	
<input type="checkbox"/> Azzurro / blu	<input type="checkbox"/> Vetrina	<input type="checkbox"/> Emozionale		<input type="checkbox"/> Poco visibile	
<input type="checkbox"/> Rosso	<input type="checkbox"/> Logo / insegna	<input type="checkbox"/> Tecnici		<input type="checkbox"/> Visibile	
<input type="checkbox"/> Rosso	<input type="checkbox"/> Luce	<input type="checkbox"/> Orientamento		<input type="checkbox"/> Solo richiedendoli al personale	
<input type="checkbox"/> Giallo	<input type="checkbox"/> Suoni				
<input type="checkbox"/> Verde	<input type="checkbox"/> Costumi				
<input type="checkbox"/> Altro					
Arredi	Target	Target del materiale comunicativo		Come vengono valorizzati i prodotti nuovi / trend / selezionati?	
<input type="checkbox"/> Generici	<input type="checkbox"/> Pubblico ampio	<input type="checkbox"/> Bambini		<input type="checkbox"/> Non vengono valorizzati	
<input type="checkbox"/> Personalizzati	<input type="checkbox"/> Esclusivo / sofisticato	<input type="checkbox"/> Genitori		<input type="checkbox"/> Materiale di comunicazione	
	<input type="checkbox"/> Amatori / esperti	<input type="checkbox"/> insegnanti / educatori		<input type="checkbox"/> Arredi solo espositori	
	<input type="checkbox"/> Bambini e adolescenti	<input type="checkbox"/> Pubblico allargato		<input type="checkbox"/> Servizi s/v attivita	
	<input type="checkbox"/> Solo bambini (>2 anni)				
N° di spazi	Coinvolgimento tramite	Strumenti di comunicazione presenti		Cosa prevale nella comunicazione?	
<input type="checkbox"/> 1 / open space	<input type="checkbox"/> Prodotti	<input type="checkbox"/> Nessuno		<input type="checkbox"/> Caratteristiche tecniche	
<input type="checkbox"/> 2	<input type="checkbox"/> Arredi	<input type="checkbox"/> Logo / insegna		<input type="checkbox"/> Filosofia aziendale	
<input type="checkbox"/> 3	<input type="checkbox"/> Servizi / attività	<input type="checkbox"/> Brochure / flyer / cartoline		<input type="checkbox"/> Aspetti di marketing (prezzi, sconti, gadget, ...)	
<input type="checkbox"/> 4+	<input type="checkbox"/> Percorsi	<input type="checkbox"/> Prodotti			
Funzioni degli spazi	<input type="checkbox"/> Comunicazione	<input type="checkbox"/> Arredi e display		Tipologia di prodotti e servizi offerti	
<input type="checkbox"/> Vendita	<input type="checkbox"/> Prezzo / offerte	<input type="checkbox"/> Carte fedeltà		<input type="checkbox"/> Giochi / giocattoli	
<input type="checkbox"/> Laboratorio		<input type="checkbox"/> Segnoletica		<input type="checkbox"/> Hi-tech / videogame	
<input type="checkbox"/> Altro				<input type="checkbox"/> Merchandising personalizzato	
	Personale			<input type="checkbox"/> Abbigliamento	
	<input type="checkbox"/> Competenze specifiche			<input type="checkbox"/> Alimentari	
	<input type="checkbox"/> No competenze specifiche			<input type="checkbox"/> Editoria	
	<input type="checkbox"/> Altro			<input type="checkbox"/> Altro:	
Display dei Prodotti	Colori delle uniformi	Se sono presenti dei supporti digitali, per cosa vengono utilizzati?		Altra note:	
<input type="checkbox"/> Se tenuti / ripiani	<input type="checkbox"/> Distinguibili	<input type="checkbox"/> Non sono presenti			
<input type="checkbox"/> Scoffali	<input type="checkbox"/> Non distinguibili	<input type="checkbox"/> Migliore catalogo prodotti			
<input type="checkbox"/> Altro		<input type="checkbox"/> Acquisitore			
	Disponibilità	<input type="checkbox"/> Informazioni sui prodotti			
	<input type="checkbox"/> Sì	<input type="checkbox"/> Comunicazione			
	<input type="checkbox"/> No	<input type="checkbox"/> Altro:			
Gender	Atteggiamnto	Se è possibile giocare, quali sono le modalità previste?			
<input type="checkbox"/> Visibile	<input type="checkbox"/> Interessato / Coinvolgente	<input type="checkbox"/> Non è possibile giocare			
<input type="checkbox"/> Non Visibile	<input type="checkbox"/> Disinteressato	<input type="checkbox"/> Bambino da solo			
	<input type="checkbox"/> Neutrale	<input type="checkbox"/> Bambino e bambino			
Tema / Identità		<input type="checkbox"/> Bambino e genitori			
<input type="checkbox"/> Visibile					
<input type="checkbox"/> Non Visibile					

Figure. 3. One module filled with data from observation (done by authors)

From analysing all the data from observation in retail shops/stores, the following results have been generated.

- Only 6% of the observed retail shops are using personalised furniture to present their products and create engaging spaces. Most of the retail shops and brands purchase furniture directly to use in their retail spaces. Therefore, it's easy to find the same shelves and tables in different shops. However, the leading brands have always their customised furniture with the brand identity (colours, patterns and logos).
- 60% of the observed retail shops have only one open space, which is not divided, and in all the shops, the spaces are mostly dedicated to selling products. There are only a very small percentage of shops that have planned specific areas for kids to play or for small laboratories.
- The services and activities, other than selling products, in the retail shops are less presented. 90% of them provide services only for purchase. Therefore, the communication is often relevant to products instead of experiences.
- In most of the observed shops, around 70%, the staffs are capable to support consumers actively during their purchase process, including providing information, suggestions and specific competences.
- Only 2% of the observed retail shops are selling only toys and games. Books, stationery and clothes are the most popular secondary types of products in stores dedicated to children.
- Only 17% have digital support in their retail shops, and these digital devices are used for providing information of products, promotion and playing. The insufficient utilization of digital technology in physical shops is one of the big opportunities.

60% of the observed retail shops have e-commerce session on their websites, and in most cases, they make special promotion on their online platforms.

Secondly, observation has also been conducted in two international toys fairs: one is a B2C fair – fostering companies in the sectors where kids are the main target to interact directly with their users (kids) and consumers (parents and relatives); instead, the other one is a B2B fair – aiming at promoting new products for kids and their families in the business-oriented network. In the first fair, the observation was concentrated on how kids and their parents are interacting with the products and what are their preferences and feedbacks on the new products, spaces, services and communication strategies. 58 companies have been observed and here are several results:

- Most companies have created spaces where kids could play alone or with others, however, they didn't consider relevant furniture for parents to wait or activities to involve parents to play together. Kids and their parents are not considered together.
- 77% of the observed companies have adopted a marketing-driven communication strategy, which have mainly distributed traditional communication material with their logos and slogans. Obviously, this is hard to make deep impression in the minds of consumers among all the other competitors. A good storytelling can definitely help the brand to stand out.
- Very few companies have adopted digital technologies in their games and play experiences in store.

The second observation in the international B2B toys fair has showed:

- More than 95% of the companies in the sectors where kids are the principle target are product-driven. Selling new products is still considered as the most crucial activity.

Less than 5% of the companies present in the fair are “kids-centred”, meaning the organization of spaces, presence of products, communication strategies are driven by marketing rather than kids' needs. There's a lack of *human-centred design* approach in all relevant aspects of the companies' offerings.

2.4. Questionnaire

In order to better understand the consumers (the parents and relatives) of this sector, the research has also developed a list of questions. The research team has distributed the questionnaire in person, through online platform and in special events dedicated to kids. At the end, there are 160 answers have been received. There are the results:

- Around 60% of the consumer prefer to buy products for their kids in physical shops/stores and around 30% of them choose to buy online.
- Consumers have pointed out the advantages of retail shops are: 1) organized categories that are visible and touchable (66%); 2) possible to get immediately (45.8%); 3) always able to get personal suggestions and supports from staffs (41.8%).
- Some leading e-commerce platforms (especially Amazon) are the main competitors of many retail shops dedicated to toys, games and clothes for kids.
- The promotion and lower prices of e-commerce is attracting more and more consumers in the sectors relevant to kids.
- How the consumers make their purchase decisions is increasingly influenced by the social media and online information
- Many consumers (parents and relatives) are expecting diverse services in the physical retail shops: 1) qualified and personal advices (64.1%); 2) repair and return service (49%); 3) test and try-on service (34.6%)

The most expected event/activities in retail shops are: creative and educative laboratory for kids (80.4%). And others have mentions relaxing spaces for parents to spent time with kids; meeting with experts in specific area relevant to kids; simple entertainment activities for kids.

3. Insights for developing new retail experience for kids and their families

Retail sector for kids needs a deep evolution. The consumers are expecting more and more from companies' offering, at the same time, new generation of consumers are coming and acting much more actively in the market. The companies need "design" not only for new products but for thinking new services and retail models from a holistic and systematic approach.

Retail for kids, especially the toys sector, is showing a global crisis and a big challenge to the traditional dominant channels. The big bankrupt of *Toys"R"Us* international stores chain represents not only a dramatic event but the real signal of the need of change in this sector. The large distribution system has conquered the most spaces of the market against the traditional shops, and they have opened a bloody war on cheap costs and low price. However, now in this kind of war, the e-commerce is a winner and the retail shops are rarely able to be competitive and attractive to their clients and consumers.

In this scenario, the biggest companies need to became multi-channel and offer all kinds of products and services around kids: starting from the movies to the gadgets, from the toys to the stories behind, from traditional games to Apps, from the characters to the fashion clothes and accessories. We need to remember that the products (and services) for kids are special and different from other products. Especially during the first decade, the users are the **kids** but the buyers are the **adults** (parents and relatives). Usually most companies are marketing oriented than design oriented, looking more from the perspective of adult buyers instead of the kids' real needs. And this should definitely be considered in the retail experience.

Simultaneously, the new generations of parents are asking for more and more on the “quality” of the products and services for kids: more safety, more cultural values, more learning opportunities, but at the same time, the videogames without a strict control by the adults became more and more important in the kids’ life. This is a scenario where crisis and opportunity co-exist. Design for Kids & Toys can play a strategic role for the kids’ positive growth. There are not only products but one complete “Product Service System” for kids, which will strategically impact the intellectual, psychological, affective and social growth of kids.

3.1. Integrated physical and digital experiences for kids and families

One of the driven trends in Kids & Toys retail market is represented by the integration between digital and physical interactions. During the observation in the toys B2B fair in February, we have observed a growing number of *integrated* toys and games. For example, little car driven by an App in smartphone controlled by parents; traditional kids’ books with digital interactions or video stories with real characters to move on a connected game board. One interesting and successful videogames is called *Father and Sun*, designed by Fabio Viola, collaborated with a Museum in Naples. In this case, the interaction between the digital language and the reality of a museum is used to promote cultural experiences with new emotions. The integration between digital and physical can also help to build a stricter relation between parents and kids (an important trend of this era) living together and communicate in a contemporary language.

The biggest e-commerce companies are opening physical shops, and the physical shops are moving to use more digital tools in their physical spaces and offerings. These two channels are hard to separate from each other. Integrating physical and digital experiences in retail spaces is also match the emerging new generation of consumers. The young parents are living in a digital life that is closely connected with their social networks. The retail shop should act as a place where they could benefit the “human-human” interaction, at the same time, it’s possible to get advantages from interacting with “smart” machines and systems. This is a promising scenario and future develop direction: the virtual world is searching more relation with the real life and the real life are more integrated with the digital reality. Consumers should feel free to choose, to connect, to immerse and to leave between these two types of experiences.

3.2. Retail shop as one touchpoint of a service system

The retail shops become more and more important only if they will able to change the relation with the client, from a space selling products to an experience-based place. But it’s not enough, the retailer has to know exactly what kind of needs and desires the clients have. Then the retail shops could “intelligently” select the best products and personalise the services for them. In the global market in which you can find all things on the web, and the competitive values for the retailer should be presented as best selection, high customised service and unique shopping experience dedicated only to him/her.

Especially in the kids&toys sector, a good 360° service for the users and consumers will be a winner in the competition: the retail shops can become the point in which the digital services “physically” meet the clients; the retail shops can create the best balance between different contemporary tools and languages creating a real experience in which the client can feel to be a **person** and not only a *consumer*: not only as a market target or a part of the big data system. A client need to be recognized, informed, updated and helped in the whole purchase process. They need to have a real touch on products, to talk with an expert, to get useful information at different moments. The consumer needs to trust in somebody dedicated to provide the services for him/her. The purchase now will be a result of a series of special and personal services, not only a simple goal or action. So the most ancient and personal rule of a retailer - trust relationship with the clients - becomes a **contemporary competitive value**, presented by well

furnished, welcoming, comfortable spaces. The best brands know very well how important the physical and emotional relationships with the clients are.

This kind of evolution in the retail channel for kids can create the difference and truly help both qualitative and quantitative growth in this sector. The daily connection among person/customer, retailer and company in a systematic network of information and observation can offer new ideas, which can also be tested directly by the children in the shops. Afterwards, this activity could give feedbacks immediately to the designer and the companies to improve the results. The retail shops have to become a real “encounter” (Meroni & Sangiorgi, 2016) in kids and toys sector, where the direct experiences with the products for children and with new services for parents can create the difference and the loyalty of the brand.

3.3. Communication strategy to involving kids and their families

Coherence is the keywords of all the communication strategy, so in this scenario, the principle strategy is: ***the truth well told***. We live in a period in which the fake information (in different fields) create distrust and suspicious. We live in a period in which the information is redundant and need to be selected. The retailer, before to be a seller, has to consider itself as a “*media*”, a “*cultural and entertainment media*”, who is able to select and offer right products, new services and truth information for kids and parents.

The retail channels have to become the “platform” in which the clients can lives in the experience with the brands, and the communication strategy has to be coherent with this mission to create special events in different languages and through diverse tools. The events create real experiences, which (the good ones, obviously) create impressive memories and loyalty for the retail spaces and the brands. Good experience impulses people to tell it to others and this is the best communication of all (word of mouth). A good strategy can create day by day an interactive community, starting from the retail shop, connecting parents, kids, school, local institutions and companies in relevant sectors to engage in promoting a more qualitative approach to products and services for kids. Moreover, the communication strategy has to be very dynamic, flexible, changing and related to the season and different periods of the year. The communication has always to be really emotional. It’s demonstrated by neuroscience that the emotional system in brain is dedicate to build our memory that truly influence our choices and our behaviour models.

References

- Accenture, 2013 a., “Accenture Technology Vision 2013 - Every Business Is a Digital Business”, Accenture [internet]. Available at:
<http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Technology-Vision-2013.pdf> [Accessed on 30.07.2018]
- Adams, R., Mann, L., Jordan, S., & Daly, S. (2009). Exploring the Boundaries: Language Roles and Structures in Cross-Disciplinary Design teams. In J. McDonnell & P. Lloyd (Eds.), *About: Designing: Analysing Design Meeting* (pp. 339–358). Boca Raton, Fla.: Taylor & Francis.
- Buchanan, R. (2001). Design research and the new learning. *Design issues*, 17(4), 3-23.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (1994). *Handbook of qualitative research*. Thousand Oaks, CA, US: Sage Publications, Inc.
- Ebeltoft Group, 2012, “GLOBAL CROSS CHANNEL RETAIL REPORT - The (un)connected store”, Ebeltoft Group [internet]. Available at:
<http://ebeltoftgroup.com/global-cross-channel-retail-report---the- unconnected-store.html> [Accessed on 30.07.2018]

- Forlizzi, J. (2012). The Product Service Ecology: Using a Systems Approach in Design. Proceedings of the 2nd Conference on Relating Systems Thinking and Design (RSD2). Oslo, Norway, 1–27.
- Gelman, D. L. (2014). Design for kids: digital products for playing and learning. Rosenfeld Media.
- IDEO. (2011). Human centered design toolkit. Available Online at: <http://www.ideo.com/work/human-Centered-Design-Toolkit/> [Accessed on 10.05.2018]
- Janda, S., Trocchia, P. J., & Gwinner, K. P. (2002). Consumer perceptions of Internet retail service quality. *International Journal of Service Industry Management*, 13(5), 412-431.
- Keeling, K., Keeling, D., & McGoldrick, P. (2013). Retail relationships in a digital age. *Journal of Business research*, 66(7), 847-855.
- Kimbell, L. (2011). Designing for service as one way of designing services. *International Journal of Design*, 5(2), 41-52.
- Meroni, A., & Sangiorgi, D. (2016). *Design for services*. Routledge.
- Montgomery, K. (2002). Digital kids: The new on-line children's consumer culture'. *Children, young people and media globalization*, 189-208.
- Nylén, D., & Holmström, J. (2015). Digital innovation strategy: A framework for diagnosing and improving digital product and service innovation. *Business Horizons*, 58(1), 57-67.
- Prepletaný, D. (2013). The Impact of Digital Technologies on Innovations in Retail Business Models. *Aalborg University*.
- Rigby, D. (2011). The future of shopping. *Harvard business review*, 89(12), 65-76.
- Sanders, E. B. N. and Stappers, P. J. (2008). 'Co-creation and the new landscapes of design'. *CoDesign*, 4(1): 5–18
- Steen, M. (2012). 'Human-centered design as a fragile encounter'. *Design Issues*, 28(1): 72–80.
- Thorsteinsson, G., & Page, T. (2012). *The Value of Good Toy Design for Children: Toys Can Support Child Development*. LAP LAMBERT Academic Publishing.
- Verganti, R. (2009). *Design-Driven Innovation: Changing the Rules of Competition by Radically Innovating What Things Mean*. Boston, MA: Harvard Business Press.
- Zurlo, F. (2012). *Le strategie del design. Disegnare il valore oltre il prodotto*. Il Libraccio.