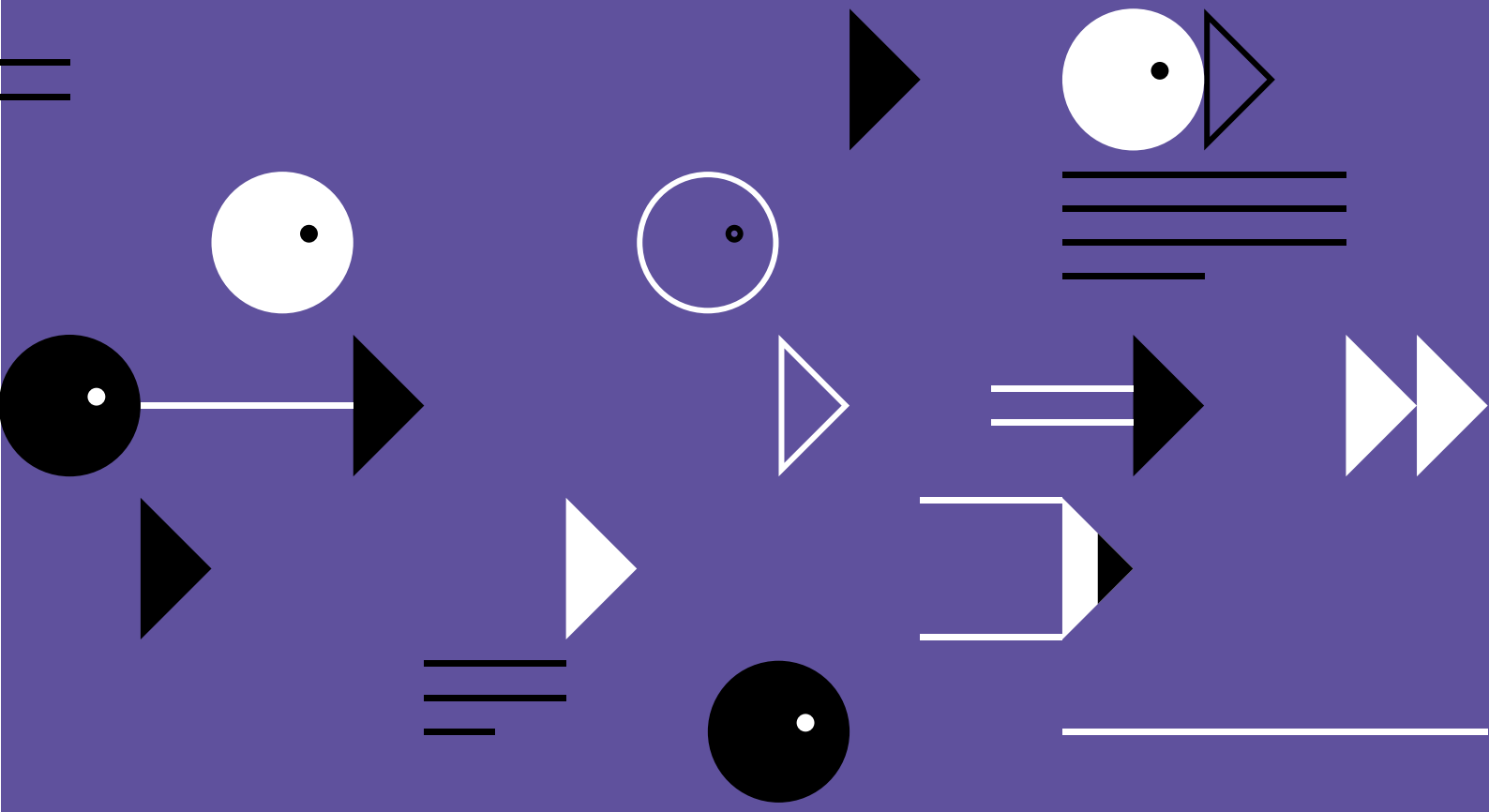
Design Futures Literacies

VOL. 2
ESSAYS & REFLECTIONS

ED. ANDREW MORRISON



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ED. ANDREW MORRISON

Erasmus+

AHO ELISAVA POLITECNICO MILANO 1863 ual: university of the arts london

FUEL4DESIGN

Future Education and Literacy for Designers (FUEL4DESIGN) aims at developing knowledge, resources and methods to help young designers designing for complex tomorrows. FUEL4Design builds on an extensive research programme conducted by leading universities and experts in Europe. Design futures literacies are a transdisciplinary mix of theories and concepts, methods and practices geared to support situated and resilient pedagogies for design students and teachers to engage productively and critically with the given and changing contexts and conditions of Design. This is a design that reaches beyond functionalism into the pragmatic and the imaginary. It works with a diversity of participants and interests. It aims to meet real world needs but to also reach beyond their constraints and conceptualisations to develop and sustain specifically design based literacies and competencies. These are mental, material, creative and critical skills that are enacted performatively. In doing so, we need to acknowledge and address the changing nature of futures where the temporal and spatial, social and political, economic and ethical are increasingly entwined.

Design Futures Literacies Vol. 1 — Practices & Prospects

This collection presents ventures into futures in and through designing with master's and doctoral students. Included is an overview of current approaches and content on design education. There follows a group of overviews and reflections from FUEL4DESIGN that reveals novel and exploratory work carried out over a three year period. These insights provide the core for further repositioning of what design futures literacies and pedagogies might contribute to reconfiguring design education in times of uncertainty, challenge and change. With a process view on making, learning, teaching and knowing, Volume 1 also reaches into current and ongoing debates and shifts towards decolonising design education futures. It offers modes and means of addressing matters of power, inclusion and transformation of design universities and includes aspirations towards both imaginary and pragmatic designerly futures.

Design Futures Literacies Vol. 2 — Extended Essays

The set of long-form essays gathered here complements the focus in Volume 1 on practices and prospects of futures in and through design learning, teaching and researching. Collaboratively composed, these essays span a range of themes from and beyond FUEL4DESIGN. Each essay addresses central issues and potential in seeking to identify and elaborate on directions to meet 21st century needs and contexts of changing 21st century design education. The essays make a novel contribution to synthesising and elaborating on a diversity of content, methods and potentials of transdisciplinary design inquiry. Individually, and as relational and rhizomatic whole, the essays provide a recursive orientation to anticipatory approaches to shaping futures design literacies and pedagogies.

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1. Orientations

BY Andrew Morrison & Karianne Rygh

Introduction

Generative designing with reflection

Our ongoing engagement with design tools and meaning making in design pedagogy asks that we are curious, creative and critical about how we work with materials, artifacts, processes, participation and contexts of use. These are contexts that are futural in nature yet oriented toward the present and they are implicated in the past. In working towards exploring and materialising design futures in the plural, it is in the emergent and ongoing situations of use that anticipatory design pedagogies are relationally and reflexively and developed and realised. Critical takes on our legacies as well as our creative design generative imaginaries, however, may converge in our immediate present. They are influenced too by how it is that we learn, live and work in the unfolding contemporary dynamics of the now.

However, in an anticipatory design pedagogy this a present to which we may return, accompanied by design experiences from future shaping. To do so we are entangled, indirectly and directly, in processes and activities that are materialised through meta-design and recursive, abductive and transversal re-design and analysis. Not only do we find ourselves 'differently arrived' and re-positioned in a slightly out of focus poly-present of sorts. This is also a present that is uncertain, in flux and on the move.

The ways we choose, position, implement and assess the methods, means and articulations of our design futures pedagogies in relations to our contexts of teaching, learning, researching and collaborating thus orients and influences how we may know what we know. It has a major bearing on what sorts of design-enriched futures our design universities and student designers and researchers might take forward into their workplaces and professional lives. This is the case individually, collectively as a profession and in societal transformational terms as we work together in design-centred activities directed toward shaping wider, preferred, possible and potential futures.

In such an anticipatory design pedagogy, we are involved in working with transformation or 'metanoia' (Avanessian & Hennig, 2017). Drawn from Christian religious language referring to 'conversion', in terms of ontological thinking around cognition and neurology, metanoia may be thought of rather as a mode of relations between thought and language in transforming the world. It is concerned with the bringing of a world

into being. Thus it is concerned with means to becoming, processes of wayfinding and emergent disclosures of ways perspectives frame such transformation. This is a key point to emphasise when we take up design tools and techniques that we entwine with research methods and methodologies.

Anticipatory design pedagogies are geared towards supporting learners' own generative designing-with reflection. Concerning tools, means and mediations, such futures design pedagogies need to be appreciated for the anticipatory perspectives and practices they allow and promote, limit and direct. We need to be constantly aware of the dynamic relations between tools, toolkits, means and mediations as these are constructed and circulated by design and futures communities (see e.g. Engasser, (2023). In essence we are engaged with building epistemological design futures literacies.

◂ Figure 1
Part of the Master's in Design for Emergent Futures (ELISAVA, IAAC), using the Atlas of Weak Signals physical kit during the second week of the programme, DESIGN FUTURES SCOUTING, 103. (Image credit: Fab Lab Barcelona).

These are matters and processes of we know what we know by how we design and how we teach design. They concern how we make and select and apply tools, methods and a multitude of means, materials and media in making and shaping anticipatory design pedagogies [Figure 1]. All too often, tools are simply declaratively touted as doing and delivering; they are assembled and marketed, promoted and reproduced via toolkits.

Similarly, design pedagogies need to be mindful of the motivations and foundations of many of the tools generated historically in Futures Studies and in foresight work. Many of them embed earlier approaches to planning, strategic decision-making and management that is directive and confirmatory in nature, and where and control of different and even divergent and emergent forms of knowing and being may have prevailed over concerns with exploratory modes and means of becoming and learning central to shaping shared and more democratically distributed and experienced futures.

In looking to mediation, we lift up attention to somewhat under-developed relations between design and media and communication studies (e.g. Taffel, 2021). We situate this in respect to interaction design and preponderance of Human Computer Interaction (HCI) and the burgeoning digitisation of design and everyday life and work where anticipatory design pedagogies are intensely performative, playful and culturally articulated as much as they need to work to provide security and continuity of access and use. One of the challenges is how to hold such relational, diverse and varied approaches and methods in view and to work with them, as material and as means in dynamic anticipatory epistemologies written out of deep decolonising programme and movements (e.g. Lopéz-Lopéz & Coello, 2021). These are ways of making knowing and knowing through making. Design education is beginning to refer to and follow related processes of decolonising itself methodologically (e.g. Tuhiwa Smith, 2021). It is drawing on feminist and queer methods amongst others in reconfiguring itself in non-representational terms (e.g. Vannini, 2015). Design education institutions, in European universities such as ours in alliance and partnering with those in the 'Global South', such as in Brazil and South Africa.

These are sites and activities, venues and events, and processes and artifacts where systems and articulations are entangled, where human and non-human, political and cultural ecologies are oscillating and being better understood. They are apparent and also have potential to become in topologies and kinetic activities that are at their core design methodological in character and practice. Together, remixes and re-articulations of tools, means and mediations, need to be understood systemically and as matters of meta-design as we take up in the essay's final section. They are central to modes of action in hope, to processes of making-to-know and knowing-through-making. In educational terms, but also in societal, ecological and planetary ones, in such futures pursuits we need to ensure that our design futures aspirations remain open-eyed. They need to continue to be voiced through dialogue that engages with difference, diversity and negotiating change in which students and designer-citizens may be critically engaged and imaginatively inspired in enacting and achieving change by design (Figure 1). In all of this, design is connected with value inscription and generation, embedded in the world views and tools and methods we employ.

Key concerns

How might materials, modes of communication and meaning making be appreciated and appraised as part of heuristic, formative ways to shaping design futures literacies?

In what ways might we configure design spaces and interventions for futures learning?

What are the questions and problematics we might frame and engage with in looking into relations between tools and toolkits in shaping design futures pedagogies and literacies?

In what ways do tools need to be examined and understood in terms of their purposive and contextual design, via their participative use, and in terms of the influences and impacts they might help realise?

What mechanisms and strategies have we put into play to design tools afresh so as to offer potential insights to our understanding of how tools and mediation may work for learning and teaching of anticipatory design?

How may our exploratory practices make material key critical and discursive design aspects for further discussion and situated strategic yet open potential?

How can develop and enact design and futures as critical catalysts?

What can tools contribute to developing systemic, dynamic and fresh approaches to design futures?

How might we actively and productively take up matters methodological in decolonising design methods, tools and tactics?

Outline of chapter

We respond to these and related questions below through a set of inter-related main sections. Next, in 'Dynamics of tools, making and design futures' we discuss the need for design futures learning work to more critically look at the design and designing of tools and design futures ones, and to apply contextual deconstructions of their origins and motivations, core use situations and how design-futures relations are strongly framed and built through the promulgation of 'tools as solutions' to complex issues and less towards their being part of problem formation in the first place and alternatively being key to better problem framing and futures potential.

We then shift to ways metaphor has featured and been put to use in design and a diversity of specialist domains n a more formal academic style essay. This essay is juxtaposed with examples of our own experimental practices and descriptions as well as analyses of workshop sessions with students. Conceptualising design futures is taken further in the section that follows in which we elaborate on the role of play and the prevalence of design cards in design pedagogy and inquiry, with focus on futures. This is illustrated with different features and 'cases' from three of the work packages in the project, and shown here [Figure 2] by one completed PhD project into speculative design, posthumanism and ecologically sustainable futures (Zou, 2023).

There follows focus on the importance of mediational means in the realisation and experiential and communicative in shaping design futures literacies. This is addressed through two different takes, the first by reference to a specific student project and the second to an experimental extension of work on the DESIGN FUTURES LEXICON into it potential futures applications in co-design between its contributing designer-researcher and transdisciplinary design and design education researcher.

To draw these matters into topological relation more clearly, we take up the experience and insights on Meta-Design from one partner that had preceded and informed the project and apply and illustrate it as a means to situating and connecting perspectives and practices and indeed potentials of tools, means and mediation in shaping design futures literacies.

▲ Figure 2
Playing cards embodying posthumanist perspectives on speculative futures and current approaches to developing Eco-Cultural-Techno cosmetics for humans and non-humans (Zou, 2020).

2. Making sense of entwined and unrealised relations

BY Andrew Morrison & Karianne Rygh

Three key issues

In such entwining, three issues matter immensely regarding the potentially transformative roles of design tools and techniques and research methodologies and methods. These issues need to be marked out as each of them does not substantively address relations between design and futures.

The first is that design pedagogies and design research tend not to easily distinguish or weave together their choices and uses of design tools and techniques and applied and situated research methodologies and methods. What is selected, combined and reconfigured methodologically and in terms of methods take on re-combinatorial features and functionalities of their own. They become different in what they allow and materialise. Little detailed work in design has actually worked at this nexus or interface, despite inspirational close studies of social science methods on speculative inquiry (e.g. Lury & Wakeford, 2012; Wilkie et al., 2017, 'inventing the social' (Marres et al., 2018) and catalogues of social methods in the *Speaking for the Social* (e.g. Knox & John, 2022).

Equally, methodological relations between Design and Futures Studies are often trapped in the predominant modes of knowing and assumptions about one another's operations and may not actually be in dialogue with one another, or acknowledge their potentially productive relational differences. Design education is generally not a topic addressed in works on design and domain disciplinary methods. Design centred publications have begun to address matters methodological and dialogue and intersections between design and ethnography continue to grow (e.g. Pink et al., 2022) including futures (e.g. (Akama et al., 2020; Pink, et al., 2023).

Second, design inquiry and its pedagogies typically do not look to a synthesising of methods from the social sciences, humanities, and computing in which design located perspectives are in the foreground. For example, work in anthropology and design (Ingold, 2013; Miller, 2017; Smith et al., 2020) and ethnography and design (Murphy & Marcus, 2013) has tended to be driven by social science discourses and methods,.

However, Drazin (2021: 237-238) has identified what he terms 'a third age of design anthropology'. This is characterised by the ubiquitous mass character of design and its roles in rethinking ways of living in political and economic systems in which design works heuristically, in dynamic flows and observations of the fluidity of human culture in design.

Design education is seldom a key feature in these writings on design the social sciences and in leading works on design and anthropology (Clarke, 2017) where changing interdisciplinary relations between objects and cultures are in focus. These may be understood as part of a larger swathe of interests, relations and metonymic links in gathering together diverse views on design methods and social science inquiry in the *Handbook of Interdisciplinary Research Methods* (Lury et al., 2018).

Third, relations between design and anthropology are fruitful yet they are also a little more complicated when futures views are added to the mix. Salazar et al. (2017) and Bryant & Knight (2019) have addressed matters of researching, less making, worlds that are emergent, changing and uncertain. Again, the ways in which knowing through designing and analysing design, with humanities infused, social science and technology studies inflected modes of inquiry, does not have design as its focal point.

This work is the task of design researchers but also design educators and graduate students as we work together and alongside one another in shaping expertise and its exchange and critical-creative assessment and mediation as part of shaping futures by design. Examples of this appear in the collection Design Futures (Candy & Potter, 2019), such as focus on makerspace platform-related pedagogies (Potter et al., 2019).

0n tools, making and mediation

The interplay of tools, methods and mediations, from the technological to the imaginary, is central to the realisation of *Design Futures Literacies*. For Casais (2020:11).

> *… design tools make dense knowledge streamlined, actionable and accessible; and that they present a lot of information in a small and portable size that can be used in multiple ways (particularly card sets). Furthermore, this modality tends to communicate with images and concrete text which helps create strong mental images and aids with better learning. Tools illustrate dense knowledge with various modes of communication: symbols, icons, graphs and diagrams, eliciting conditions, behavioural manifestations, anecdotes, pictures, strategies, solutions, etc.*

Where the methodological in design making and inquiry concerns positioning approaches and techniques, methods and tools work together in the ongoing processes and interactional and performative interactive exchange of products, services and systems (e.g. Morrison et al., 2019; Björgvinsson et al., 2012).

Drawing in master's and PhD teaching and research, and partly aligned with Stappers and Giccardi (2017), we have mapped four intertwined epistemological constituents: Research Methodologies, Research Methods, Design Techniques and Design Tools (Morrison et al., 2019).

Briefly, Research Methodologies concern knowledge and frameworks for how we do and know what we do. Research Methods address the frames and analytical strategies we deploy to carry out design inquiry. Design Techniques refer to means and activity centred design actions we put into play to carry out designerly ways of knowing.

Design Tools may be understood as more specific artifacts and devices we make and take up to carry out design and related research by designing.

In the inter-related four-way mapping Morrison et al. (2019: 271) propose that:

> *… looking at methods of inquiry in design as contextual actions offers a way of apprehending and framing the myriad of ways in which techniques and tools, actions and contexts are intertwined in generating knowledge (Sanders et al. 2010). Such a view facilitates understanding of the doing of methods that are the accomplishment of a practice. This involves the interconnection of person, place, craft, matter, and process. We argue, then, that better connections between design methods and critique may be achieved if more attention is given epistemologically to how we may conceptualise and enact design research as a making-analytical practice.*

Further, in making a four-way distinction and related paper-based activity, we argue here that that clearer distinctions need to be made between design techniques and design tools and their impact on our design pedagogies and broader futures literacies.

Tools have received considerable focus in the formalisation of design education and in diverse domains of design research. For example, focus on tools have been central to both the advance and critique of interaction design and tendencies towards technological determinism. Tools have been critiqued for not being adequately situated in discourses and practices of co-design, participative use and reflexive, situated review. Equally, Service Design has expanded rapidly in the past two decades one might argue through its use of business, marketing and management disciplinary framings through which design tools have been promoted and often not analysed more fully in terms of their purpose, motivations and affordances as design devices and artifacts, processes and mediational means. Here we may need to look to the types of potential modes of knowing participatory and co-design tools and methods might inscribe (e.g. Sanders et al., 2010) as to the types of futures they help configure or constrain in and by anticipation. Inie and Dalsgaard (2020) further discuss ways tools are used by interaction designers to 'manage' ideas, listing ten: saving, externalising, advancing, exploring, archiving, clustering, extracting, browsing, verifying, and collaborating. Missing here - and ripe for elaboration - is anticipating.

Consequently, while many design tools may do interesting or novel work when put into situate use, all too often they are presented at a propositional, directive and deterministic level rather than in terms of the opportunities, tensions and contradictions they might raise or the unexpected, negotiative paths they may open out to. Design tools have not received great attention in design education research (e.g. Dalsgaard, 2017), though they are used pervasively in daily practices and student projects, supported for example by resources such as Sanders and Stappers' (2013) *Convivial Toolbox*. Relations to tools are central to Human Computer Interaction (HCI), for example on tools, artifacts and mediations (Karana et al., 2020), and are being taken up regarding 'more-than-human' designing (e.g. Giaccardi & Redström, 2020).

As diverse domains of design go about prospectively shaping and asserting their own disciplinary and diverse identities, we need to be watchful of tools from Futures Studies that carry with them traces and forces of specific world views. At the same time - as post-humanist ecologies are rethought and exercised - our understanding of tool-context relations become increasingly important. This includes futures design affordance views, and where traditional human psychological affordances are more environmentally framed, animated and enacted.

Here tool-affordance relations are interesting and offer fruitful room for further investigation. Affordances are most often characterised, following the work of Gibson (1977) in animal ecological psychology and Norman (1988) in HCI, as being to do with perceived and actual perception via device qualities and actions that together shape meaning making in context. For Gaver (19919 affordances are not only embedded in artifacts and tools, but also in our multimodal interactions, and mediated meaning making (Kaptelinin, 2014).

In terms of anticipation, affordances are systemic and cultural: central is how design imaginaries embed and embolden mediated meaning making through the capacities and qualities we embed in the futures tools and devises we devise and apply. Here we might start to think further on 'anticipatory affordances' in the design tools and techniques we employ, for example in futures probes as tools and futures probing as technique.

Tools are never neutral devices

> *From the comparison of the design tools and their sources of knowledge, we developed a three-part model of information accessibility. This model summarizes three levels of communication and understanding that design students use, namely: level 1 – the knowledge from other fields other than design, often resorting to discipline-specific complex language, linear text and abstract reasoning; level 2 – the knowledge from design research that articulates design with other fields, makes evident the relevance of such knowledge to design practice but often remains obscure and abstract, communicated through linear text; level 3 – the streamlined, simplified, and actionable version of the knowledge, the design tool, more widely accessible to students. (Casais, 2020:11).*

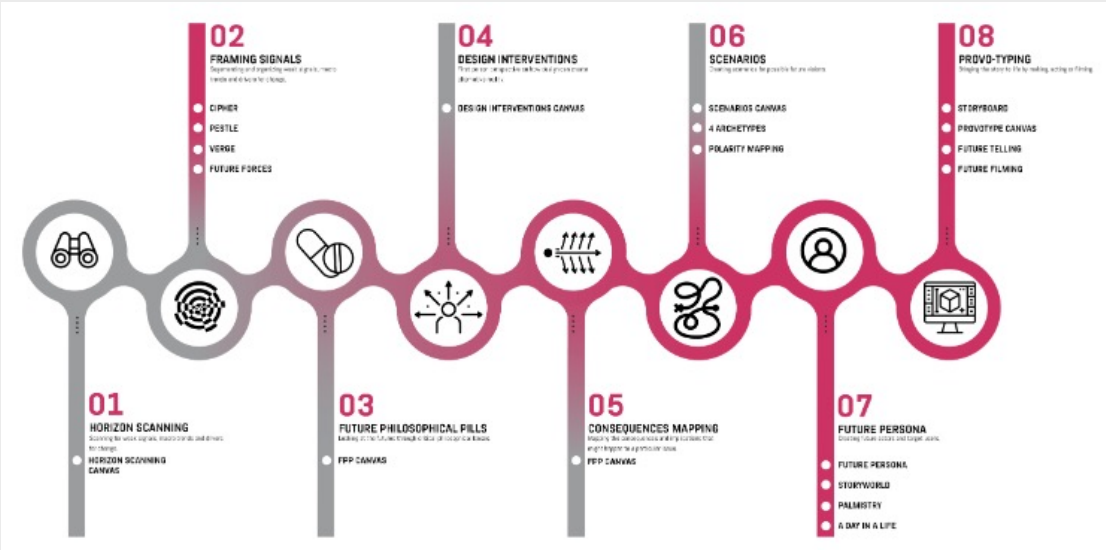
In looking into the roles and functions of tools in design and learning, and that of a futures aspect, we need to continue to ask how tools are used implicitly in processes and discourses of design knowing.

What are we to make as educators of a recent survey of design tools, methods and theories in design inquiry (Herriot & Akoglu, 2020) and to their transferability of accessibility for futures design pedagogical purposes and explorations? Where researchers, similar to our own anticipatory work in, Service Design and Public Health (Rygh & Morrison, 2022), address the tactile and co-design (Heiss & Kokshagina, 2021), how do our own tangible tool making [→ SEE **FEATURE 1**] and the application of design tools as anticipatory devices and means obfuscate or assist in substantive futures meaning making?

FEATURE 1

Tools and toolkits; relating futures tools to design futures learning

BY Manuela Celi

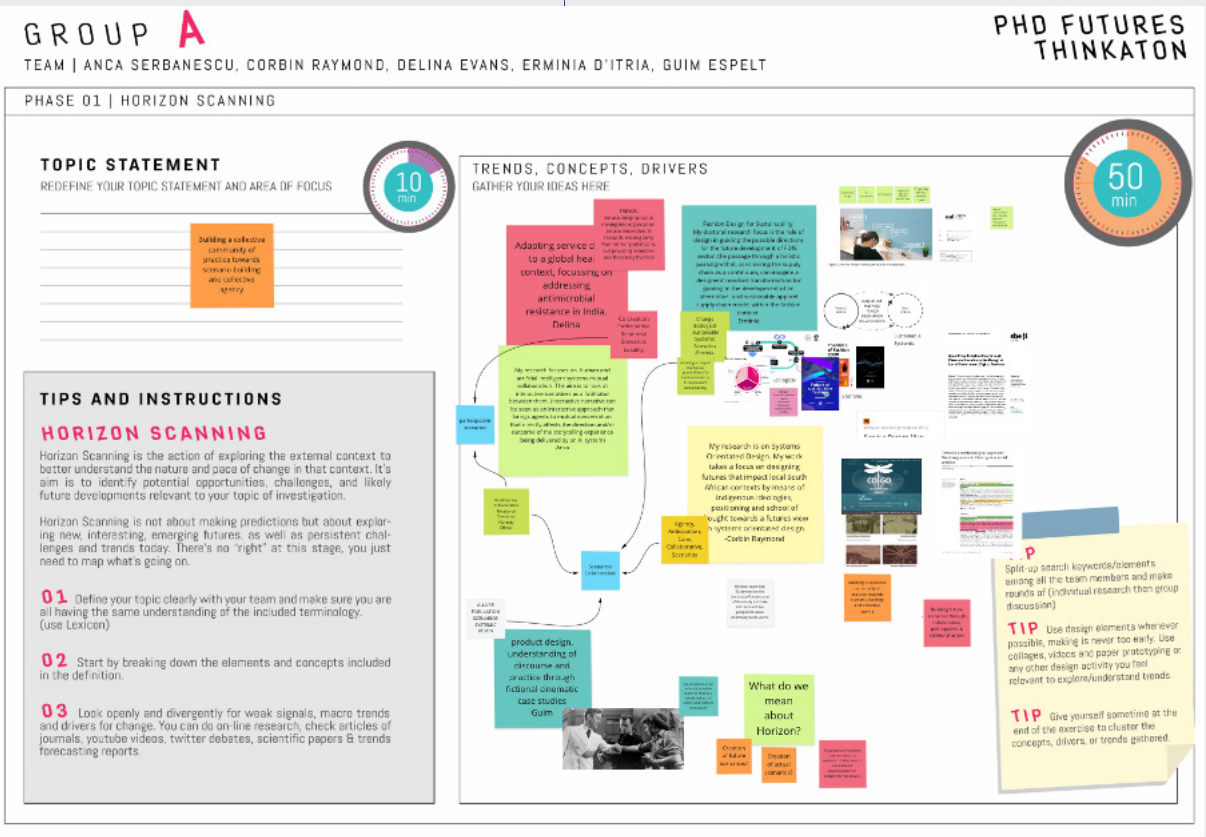


Futures Tools were selected to provide design students with access to how tools have been framed and function in Futures and Foresight Studies and practice (see I04 Overview for details) and how we might redirect them in futures in design.

FUTURES DESIGN TOOLKIT (I04)
The tools, methods and devices in this toolkit are represented in a form of:

i) Template or canvas that designers can use to identify specific aspects of their design inquiry
or
ii) A diagramming device that helps users of the toolkit to breakdown or analyse an issue or topic
or
iii) A tool that helps users of the toolkit to build and generate ideas and concepts.

'The aim for FUEL4DESIGN is to produce tools and materials that can be exploited, first of all, by teachers to organise and reframe their activities. So it was very important to interact with them and to understand if they were able to grasp this kind of knowledge from what we had and also on how to steer the content of F4D along the pathway and the process in order to fulfil the requests and needs that we addressed.'
(Manuela Celi, PoliMI, in an interview with Vlad Lyachov, I06)



Vlad Lyachov: What arose in the design making parts of your contributions to F4D that you see as most significant to highlight and to take forward?

Ammer Harb: I think one of the most important things was the tools. It really gives the opportunity to build on. These tools could also be quite adaptive and are brought from different sources. I think that these tools are a very good platform to start with. If you are someone just starting and wanting to understand, this could become a good indicator to get into this and start providing the vision and futures thinking, especially to design students. You can, of course, update it, bring it further, change, but it is a very good starting point, I believe.

(From interview with Ammer Harb, teacher and contributors to FUEL4DESIGN PoliMi I04 DESIGN FUTURES TOOLBOX, and PhD student PolIMi, by Vlad Lyachov, I06).

◄ Figure 1: Content of the Design Futures Toolkit (I04, FUEL4DESIGN).

▲ Figure 2: Example of one student group working with Futures Tool Horizon Scanning PoliMi (2020).

In terms of design education, Casais and de Francisco Vela (2020: 11) identified four types of design tools: 1) Information-based, 2) Inspiration-based, 3) Tangible design tools, and 4) and Process-based ones. They observe that:

> *Besides making complex knowledge 'digestible' and actionable, to be successful in the design classroom design tools can and should be adapted to specific needs. Moreover, it is through their usage that they are understood and that application needs to be well explained. However, using a design tool is not designing. In the end, one of the main purposes of teaching with design tools, should be to foster students to build their one (sic) research tools. (Casais & de Francisco Vela, 2020: 12).*

Further, in using design tools in teaching and learning design will also need to look closely into how they work negotiatively in different dynamic acts of designing, whether in ideation, visualisation, situations of use and so on. Through a diversity of experience on our own part, we argue that tools need to be more fully approached and unpacked in terms of the context appropriateness, whether aesthetically or performatively. This is all important when tools are then assembled in toolkits and toolboxes and where they may be presented as 'done designs for done deeds'. Research in co-design consistently shows we need to pay attention to materiality in our tools, such as Knutz et al. (2019) point out in varied explorations of the uses of probes in shaping patient democracy.

In contrast, we go so far as to say that design futures literacies need to actively deconstruct and critically assess what we see as tendencies towards 'toolboxing'. This is not just the black boxing of tools and technologies in opaque systems and applications separate for use and users' views as has been taken up in the field of Human Computer Interaction. It extends beyond participative and promotional 'democratic' claims for D.I.Y., Additive Manufacturing and AR/VR technologies. It's also involved in teasing apart and exploring the multi-affordances and multi-materialities of physical-digital, human-non-human, technical-ecological relations and their ecological, economic, aesthetic and communicative relations and interplays in rethinking what we understand to be tools and their mediational interplays and materialisations as say new forms of services and interactions.

When looking into tools and design futures learning and related researching, there is a further need to distinguish between and question the status of the tools being sought or taken up. What tools are right for what needs, tasks or opening? Is it one that already exists and needs to be understood in terms of its design motivations and use? Is it a tool that is being re-purposed or used abductively to realise different ends? Or might the tool be newly designed and in need of a different set of watchful eyes and questions? And then we will always need to ask what is that we aspire towards in adopting and adapting tools, or in jettisoning them and replacing or redirecting our creativity and use in different directions, potentially open, risky and undetermined ones. What design futures criteria do we need to include and develop in doing all this? How might tools work as critical prompts, teasers and problem makers in processes of exploratory making? In what ways might we tangle with the pull between seemingly disparate or

contradictory affordances and mediational means that tools and their contexts of activation might bring forth, entwined and anew, differently and unexpectedly?

All of these questions may also be reframed in wider move to decolonise design in which educational and research methodologies and methods and design tools and techniques are undergoing deep challenges and part of institutional change processes. While these may themselves be contested, they seek to work to change historical and contemporary discriminatory configurations and practices. Attention is needed to how it is that we form, shape and pattern how we know what we know and what it is that they that allows us to enact and to transform. Attention to anticipatory systems is central to such change processes and tangible outcomes having real, and lasting force for marginalised persons, communities and groups.

However anticipatory cultures are also in need of methodological and pedagogical attention and design. As mentioned earlier, work remains to be done in our view generally and in terms of design futures pedagogies on distinctions and interplays between research methodologies and methods and design tools and techniques.

We need to attend to these carefully too when plural futures are also likely to be colonised and appropriated as power and preferences are exercised and configured as futures emerge and are claimed and proposed, and where they are projected and anticipated, nurtured and occupied in the hands of people previously denied reparative justice, or displaced from land and resource stewardship, for example, in wider colonial and extractivist economic forces, policies and histories. Our design futures literacies cannot not be decolonised, and continuously so, in their making and re-making. We take up these matters again in the final chapter in Volume 1 of *Design Futures Literacies* entitled Learning Futures Design Otherwise.

These matters come to a head in a design futures literacies frame when one engages with tools derived from Foresight and Futures Studies. Although these cannot be read under a simple blanket of methods and means, epistemologically so, they are themselves products of their times and the parties to which they were commissioned, but also promoted and applied. In the next section we look into this more closely and give an account of how we took them up in 104 on DESIGN FUTURES TOOLKIT.

Re-thinking tools in design futures pedagogies

Tools and their selection and gathering as toolkits that are put into critical and creative are powerful components in use design futures learning that is finding ways, seeking out possibilities and tilting towards alternative futures. Tools and their intersections and applications need to be appreciated as together forming a mode of coming to know, not as being about programmatic verifying criteria. Such a view of design tools for generative futures making ought to help us sidestep a determinist pull of tools as devices to resolve complexity and reveal solutions.

Instead, in design futures learning and teaching, tools may be taken up in our own designerly hands and critical designerly minds and analyses to support processes of

situated, mediated meaning making and exchange of knowing. They may function as prompts, help us think through and think out designs, develop objects and processes and craft and convey anticipatory propositions and projective scenarios. These may help us to open out, expose, enable, upend, catapult and problematise our shaping of futures and ways futures views shape us as designers.

There is also what we see as a 'when of tools' in realising design futures literacies. This refers to further attention being needed in our view to building capacities and fluencies in working in early phase tools use. When tools are used in workshop settings, they may also be applied in rapid iterations. The speed of their uptake may steer implicit processes productively, but it may mask needed dialogue or the making explicit embedded views and vocabularies and limit attention to wider matters of method. It isn't that the tools do the job, or fulfil the aims of the workshop. Rather it is how they are part of a wider ecology of design situated meaning making and the activities of making artifacts and their dialogical relationship to mediational processes and materialisations via variety of modes of expression and communication.

At one level this may seem obvious to design educators. This is what we do in designing. At another level, in such practices within embodied and contextually sensitive activities of futures meaning making through design we need to continue to hold open dialogical thinking and knowledge exchange. It demands of us a reflexive, dynamic activity centred awareness and criticality as to how tools contribute to or restrict acts of intentional futuring and how our performative design futures (whether as products, interactions, services and systems) allow us to review the roles and affordances of tools we have in our hands and use imaginatively.

Our understanding of tools as a key component of design futures literacies depends on the ways we explore and exercise them and through the attention we pay to their affordances and affects, their associations and applications, and importantly, how we engage them and with them in terms of their perceived, actual and imaginary implications [→ SEE FEATURE 2]. To do so allows design educators and students to actively position and to work with tools that are centred in a design learning through becoming frame, not only a futures foresight one or a design as delivery trajectory of tools, mediations and meaning making. There may be a richness in the design and communicative potential of tools in that they offer their users to use them in different ways to reach towards and to realise different meanings [Figure 3]. Metaphor is central to this meaning making and is the focus of the next section.

▲ **Figure 3**
Screenshots of cards in the Weak Signals card deck. Master's in Design for Emergent Futures (ELISAVA, IAAC). (Image credit: Fab Lab Barcelona).

FEATURE 2

Processes of working with tools and tangibility in design futures and services for public health

BY Karianne Rygh

Here I'm including some notes on reflecting on working with tangible tools in my doctoral research as a product-service designers within the wider research project connected Care (C3) in which AHO participates..

See also Essay 5: Care, Engagement & Design Futures Knowing.

I began the work presented below pre-pandemic, and with a focus on tangible tools development in the context of Public Health (PH) and Service Design (SD). The public health crisis of a global pandemic that has played out similarly and differently in different countries has most definitely had a bearing on my thinking about tools and futures in designing and in my own design (futures oriented) learning.

As part of my doctoral studies and research at AHO, I have been working in the intersection between Product and Service Design. My aim has been to develop professionally rendered tangible tools to assist on processes of negotiating relations between Service Design and the provision of complex care opportunities, options, practices and futures in Public Health (Rygh & Morrison, 2022).

In order to develop meaningful contributions to the ongoing development and application of Service Design in Public Health, I have needed to work closely with other professionals in the healthcare field and to develop tools suited to needs in context, and in particular to the co-shaping of futures needs and provision of support and care for patients (see figures 1- 3 below). Heiss & Kokshagina (2021) take up the co-design of tactile tools as part of interdisciplinary problem exploration in healthcare settings.

One part of my PhD research has centred on thinking through, making and applying in use contexts tangible tools for thinking about long- and short-term futures in the context of cancer care. This work is itself rather acute in the number of medical specialists and professionals who may be involved with a patient at different points

▲ Figure 1: Medical professional and facilitation designer discuss how the tool prototypes can be incorporated in the various activities and which order and approach is best to meet the desired aims for the workshop. The tool consisted of ward signs (round), small (meta level) beds, large (macro level) beds, figures representing patients and plastic markers for ´tagging´ beds that could be reallocated and patients that were eligible for moving.

in their journey as well as in the enhancing nature of their health and illness. In meeting with and working with a range of health professionals in the context of developing a new cancer care centre in Oslo (Norway) I have needed to embody a diverse range of needs into a set of devices geared toward shared decision-making and resource sharing around new wards, where beds themselves are a key item.

Futures of palliative care emerge and are to be realised through the availability and accessibility to overlapping and shared resources, with needs by type and volume changing over time.

I've come to appreciate that working with time, with physical and human resources often point to working in time with rather acute futures that need support for clarifying relations to resources and being able to perceive options and combinations of them. But how might one not just look at tools as functional or transactional?

There a very real need to meet challenging and longer-term systems design structuring and resource planning and allocation in I've been working with what I call 'tangible tools'.

How can we devise haptic tools in facilitating and negotiating interactions between SD and PH?

Here, from my diverse experience I see that what we say and do with our hands differs. In making things and processes tangible, you get more information via the proxemic, the haptic and the kinetic amongst other senses. Ideas, actions, suggestions and choices are signalled not verbalised.

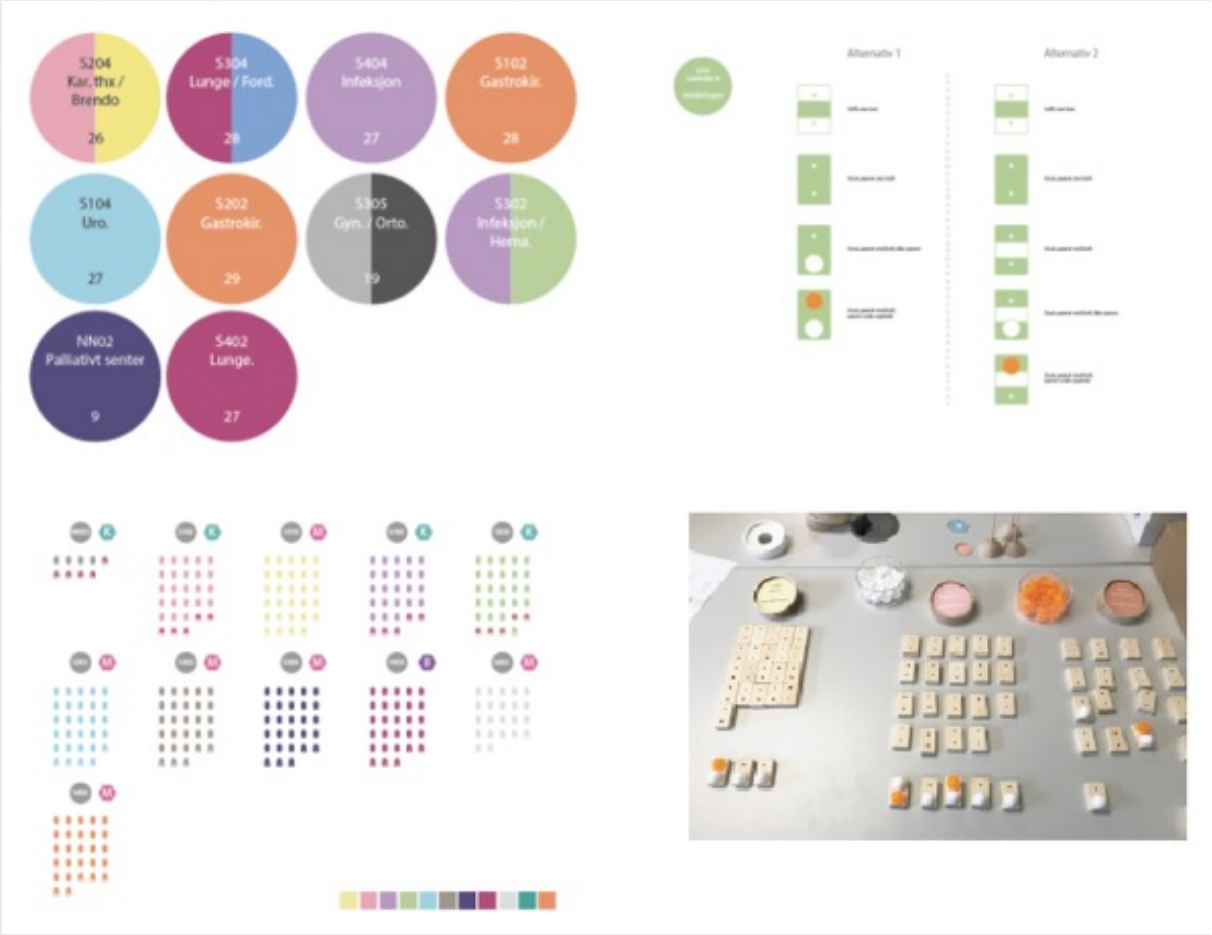
Often the delicacy of details involved in working this way is overtaken by naming and attention on tangible tools. It's as though, like the earlier and massive focus on tools in Service Design, that the tools will deliver, rather than that the tools need to be designed and that tools are filled with values and actions, choices and affordances.

As shown here, my design work offers an ecology of tangible tools in a wider ecology of working with and through needs that are patient but also PH centric. What happens in the encounters we worked towards and are illustrated has a longer term institutional and interactional futures for patients and PH professionals.

My futures-oriented literacies have thus included taking part through my own professional practice and production based expertise and my emergent designer-researcher competencies and performances. I've learned to follow through on positioning tangible tools and processes of early phase future facing facilitation. I've seen my designs informed by co-creative inputs and consultations and that they have been taken up with the aim of real contexts of situated use and longer-term futures application. As design futures literacy, I've been designing and reflecting on designing towards a flexible set of futures, interactions, distinctions and co-operations.

This I've also written up for a large volume on Public Health and Service Design with my supervisor (Rygh & Morrison, 2022) whom I've worked closely on the doctoral research and in FUEL4DESIGN. I see further value in connecting design futures literacies in SD and PH where tangible tools and their relation to the intangible, a massive part of our shared experiences, personal and professional in the pandemic.

Relations between tangible and intangible in PH and SD are in need of further investigation. where wider systems views have most certainly come into view; where design futures making, methods and literacies are likely to remain central components in ongoing shaping of our shared futures: and, where this is likely to be done through design learning, collaboration and negotiation.



This is to look beyond seeing tools as tokenistic participatory additions (Morrison & Dearden, 2013) in not only shaping public health but working with anticipatory tools development in shaping futures together for our common good.

'In thinking about design tools and learning about and with futures, I see an association to first the part of a career as product designer. You learn that Industrial Design is not just about designing a concept on the computer and making it in the workshop. The thing to make is to learn how to make it in a feasible cost-efficient way, so you need to know production process, tools, material properties and to understand how the machine-manufacturing relations and processes affect the design. And then there are different machines too!'. (Karianne Rygh, in discussion with Andrew Morrison).

◄ Figure 2: Test-run of tools with cancer centre director, medical professional and facilitation designer. The tools were arranged on the table as they would be on the day of the meeting, with each ward being represented visually by the correct number of beds. The colour codes, names and numbers of wards and beds were checked again and re-iterated as new information and data was provided. The physical tools were then re-painted and iterated before the final meeting was held.

▲ Figure 3: Highlights of the 'Allocator tool' design process. Top left: Colour coding graphics of hospital wards to be applied to tangible markers. Bottom left: Graphic visualisation of hospital beds in separate hospital wards as a guide to arranging/placing physical tools on the table. Top right: prototyping and coordinating tangible tool activity steps & facilitation using graphics. Bottom right: testing of tangible tool prototypes with project partners. (Images & graphics: Karianne Rygh, AHO).

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3. Metaphor, design and futures meaning making

BY Andrew Morrison & Palak Dudani

Introduction

Our current world of entangled views, versions, crises, climate and adaptive experience is deeply imbued with literalism – and attempts to challenge established facts through calls to misrepresented versions and popular demagoguery, from presidential to citizen levels. Yet were being participants in a planet in which human and non-human relations and systems are increasingly apparent, ecologically and in terms of futures. In this world metaphor also abounds. Pause a moment, we suggest, and reflect on the metaphors that have been taken up, put to use and multiplied concerning the COVID-19 global pandemic.

In this subsection, relations between metaphor, tools and meaning making in the context of design futures literacies alludes to the title of Metaphors We Live By, by Lakoff and Johnson (1980). Where it was conceived to orient us to the lived and experiential qualities of metaphor in meaning making, we extend this to 'Metaphors we design by', 'metaphors we anticipate by' and 'metaphors we learn by' [Figure 4]

Alongside a survey of what is a complex field of studies of metaphor, we encourage readers to look into material we include from FUEL4DESIGN that has been written in different contexts, voices and content orientations. We close this subsection with a discussion of key issues from our experience and some pointers to potential directions for further application of metaphor in design futures literacies and pedagogies.

Metaphors and meaning making

Design students, teachers, professionals and researchers all encounter and use metaphors in their daily lives and work. For design futures literacies - as shared pursuits, as joint processes and towards collaborative anticipatory design making – it would benefit us all to look more closely at how metaphors operate and how they are 'put into play' to realise our prospective and actual lived experiences. A quick turn to metaphor and the pandemic and climate change offers 'a window' into and through which to consider this. Already the previous sentence provides a view, a distanced stance, and a well-worn trope.

UNIT 06 - SCENARIOS GENERATION

ACTIVITY

Activity A | Future Metaphors

Description: The basic concept of understanding futures is very ambiguous and, in many cases, unclear to students. This exercise helps students see the different and conflicting meanings of "futures" as a concept.

Aim: Reflection and identification of what the word "futures" means to each one?

Triggering a discussion about the futures and how we tackle future challenges

Understanding the plurality of futures

Method: Give students four metaphors of the futures and let them try to interpret and reflect upon them. **The four metaphors are:**

01: Future as a Roller Coaster on a Moonless Night: It moves in the dark; we can see each part as we come to it, and we can see some parts of where we are heading, but it doesn't help as the future is predetermined and fixed over the path.

02: The future is a mighty river: the force of history flows without stopping, carrying us with it. We attempt to change, but our attempts are just pebbles thrown in this river; they cause a momentary splash and a few ripples. But no difference. The river can change its path, but only through natural disasters or massive, concerted human efforts. By looking ahead, we can see sandbars and whirlpools, and we can push the best path through any rapids.

03: The future is a great ocean: there are many possible destinations and different paths to each destination. A good navigator takes advantage of current changes and moves carefully in frog or uncharted waters. Adapts his course to the winds of chance. This ensures you get safely to your destination.

04: The future is entirely random: Every second, millions of things happen that could have happened in other ways and changed the future. Since everything is random, all we can do is play the game, pray to the gods of fortune, and enjoy whatever good luck comes our way.

Ask questions about:

Which metaphor best describes your idea of the future? Which one is the most valid or realistic? What would be the consequences of one of the metaphors? What are the implications for society of assuming the truth of one metaphor instead of the others? Can one of them be right or wrong?

Activity B | Identifying Polarities

Description: use the gathered trends, signals, and insights about the future to create futures alternatives. Students can start from the horizon scanning exercise to identify issues and polarities of the polarity mapping method.

Polarity mapping is a way to generate scenarios by understanding the main drivers of change around the issue under investigation. The polarity mapping tool is used to identify scenarios by creating four contrasting scenarios with regard to the high uncertainty and high impact drivers.

Aim: Recognise and describe the future directions and polarities of the particular issue under investigation.

Duration: 3-5 hrs.

Method: Please refer to the IO4 Futures Design Toolkit, Polarities Mapping section.

FUEL4DESIGN

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Figure 4 ►
Extract from IO5 FUTURES DESIGN LITERACY METHODS, Unit 06, by Ammer Harb & Manuela Celi.

In her groundbreaking book *AIDS and its Metaphors*, Sontag (1988) exposed the ways metaphors of contagion and contamination, invasion and militarism generally were actively used, and predominantly in the United States and western countries (though similarly in Africa and India and elsewhere) to contain not a virus. Instead, metaphors were put to strategic and cultural work to victimise, separate and stigmatise minorities who had been exposed to and were dying of HIV, in the west notably gay men IV drug users, many African American. Sontag drew on her own work on illness as metaphor as a person, and as a woman, who had survived cancer and in relation to tuberculosis.

Concerning the HIV pandemic, a label then Republican President Reagan and his government sought to avoid at all cost, Sontag revealed, historically and for contemporary society, ways metaphors were activated to confront the frightening, unknown and challenging biological, personal, collective and cultural. Incisively, she presented how metaphor was taken up to vilify sectors of society that mainstream,

conservative moral politics and citizenry who also chose to ignore, condemn, stereotype, and evade. Decades later, Republican President George W. Bush championed and funded massive HIV education, prevention and support programmes in Africa, where poorer and poorer people have died from HIV-related illnesses and where in 2022 more people live with HIV than on any other continent.

Writing shortly after the announcement of a global pandemic, Ellie (2020: online) reconsiders the notion of metaphors as and of illness following Sontag as follows:

> *Rather than applying societal metaphors to illness, we've applied illness metaphors to society, stripping them of their malign associations in the process. It may be that our fondness for virus as metaphor has made it difficult for us to see viruses as potentially dangerous, even lethal, biological phenomena. In turn, our disinclination to see viruses as literal may have kept us from insisting on and observing the standards and practices that would prevent their spread. Enthralled with virus as metaphor and the terms associated with it—spread, growth, reach, connectedness—we ceased to be vigilant. Jetting around the world, we stopped washing our hands.*
>
> *In the weeks ahead, we are going to see a profusion of metaphorical interpretations of the coronavirus. We'll be tempted to make them ourselves. But we must keep in mind the need for language to function in a literal sense, so that we can think clearly as we respond to the COVID-19 virus.*

During the pandemic, our students have learned new terms and points of view concerning public health, such as shielding, social distancing, lockdown, front-line workers, that have highlighted relations of power and service design in national and global spheres in which product-system relations have been rewritten and revealed.

Our FUTURE PHILOSOPHICAL PILLS, use the concept of the 'pharmacon' and plays with the notion of the pill as both healing or a treat/ment and poison or trick, well-being and pharmaceutical, we have sought to 'track and trace' our own and others' conceptualisations of a pandemic, climate change and a swathe of disasters and their discursive and mediated constructions, from description to analysis. The PILLS have engaged students in working with the unforeseen, the unknown, the serendipitous in with chance-based encounters with decks of cards that allow them to see permutations of such power and position relations and to critically position them in relation to their own projects **[→ SEE FEATURE 3]**.

In 'Pandemic and its metaphors', Craig (2020: online) reconsiders Sontag's work in the COVID-19 era in which 'Metaphors not only kill. They survive'. He concludes that '… even as the world appears to have spun backwards, language has the means to convey hope that it will one day spin forward again.' Metaphors are prominent in the world views we adopt and also assume, knowingly or implicitly.

In design schools across the world, students and teachers have engaged in meaning making process and co-constructive activities in the midst of unfolding, ongoing and

changing notions and experiences of crisis. We have all become more vigilant, yet as the virus has mutated so to have our own responses and behaviours. New loops, looser responses and sustained practices have, of course, emerged as we continue to learn to adapt to and to re-scale our design learning through making. In all of this, what is needed, writes Bartilotti Matos (2021: online), is 'metaphoric literacy'. This longer academic contribution this book offers and assemblage of some of the related thinking and work beyond and within design that might help us in this pursuit. (See also a special issue of the *European Journal of Cultural Studies* on a 'Cultural Commons' view of critical essay responses to the COVID-19 crisis; **Link ↗**).

Design students studying in the third decade of the 21st century have met their own pandemic and have experienced its many-sided features and tragedies, and aspirations. In different settings, they have seen at first hand how public and private health sectors respond and function, flail and fail, succeed and surmount fundamental challenges to life and to design's claims to vitality. They have also needed to adapt to deep changes to their own learning and identities as young designers in the 'conjunctural crises' (Hearn & Banet-Weiser, 2020) of the pandemic and climate change.

Humans use metaphors to make meaning by relating one thing to another, mentally, narratively and culturally. Geary (2011: Kindle) observes, referring to the poetic work of Hart Crane, that 'Metaphor is the bridge we fling between the utterly strange and the utterly familiar, between dice and drowned men's bones, between I and another'.

As conceptual and rhetorical devices, metaphors are put to use to position, differentiate, explain and communicate. They are imbued with power through ways we select and use them, avoiding here the military 'deploy', as means to create indirect perlocutionary force in utterance, and to mask, promote and reproduce predominant views and power relations.

However, this is not all, for metaphors are used in design and futures, media and learning to conceive of and to project alternative perspectives and possibilities. In FUEL4DESIGN we have therefore approached them as culturally creative and imaginative design futures material open for exploration. Even here 'a string of metaphors' and activities of teasing them out come to mind … And then, ones of speed, flow and projection proliferate in many modernist, sci-fi and techno-determinist futures.

Clearly, design future literacies need to be 'on their toes' critically speaking if our students are to be able to 'read' and 'write' futures differently by design. This is much to do with understanding the ways facts are agreed upon and circulated, but also how this circulation is also co-constructed and motivated intentionally and purposively. Work in Science and Technology Studies (STS) has shown us this in recent decades, as has related recent writing on unpacking the 'anthropocene', how diverse interests play out their preferred positions rhetorically and discursively.

Facticity and empiricism may be possible to agree upon at some core levels, while engaging with the figurative is rather more slippery, and necessarily so. Popa-Wyatt (2017: 1) reminds us that:

We think and speak in figures. This is key to our creativity. We re-imagine one thing as another, pretend ourselves to be another, do one thing in order to achieve another, or say one thing to mean another. This comes easily because of our abilities both to work out meaning in context and re-purpose words. Figures of speech are tools for this re-purposing. Whether we use metaphor, simile, irony, hyperbole, and litotes individually, or as compound figures, the uses are all rooted in literal meanings. These uses invite us to explore the context to find new meanings, new purposes, beyond the literal. Each employs different mechanisms to bridge the gap between what is said and meant.

Writing a little short of half a century ago, Ortony (1975: 51) observed the educational power of metaphors on two levels:

The vivid imagery arising from metaphorical comprehension encourages memorability and generates of necessity a better, more insightful, personal understanding. But also, it is a very effective device for moving from the well-known to the lift, from vehicle to topic.

Today, design and anticipatory pedagogies, practices and analyses are perhaps in even greater need of positioning and characterising their activities in relation to metaphor and to how it is richly addressed in a diversity of disciplines. There is room, we suggest, for metaphor and design futures to be more fully mapped and applied lest implicit matters be obscured, for example, by implicit metaphorical colonisation of our imagined, constructed, experienced and shared futures. At a linguistic level, rich insights may be gleaned from work in Critical Discourse Analysis (e.g. Musolff, 2012) on power, language multimodality and futures, that also extends to computational analysis to look beyond our perceived patterns (Charteris-Black, 2004) that are central in the functioning of metaphor in a digital age and their reach into not only social media and distributed communication but how students also increasingly need to work with digital repositories and archives (Bolognesi, et al., 2019).

Work also recently considers the role of affect bias on metaphorical representation of anticipated events (Piata & Soriano, 2022). It provides important pointers for further attention to how we might engage with our students and amongst ourselves as educators in looking into the shaping of perceived futures and the conceptual framings we conjure and repeat in their communication. This has important implications for how we work with unpacking complex, and at times, competing relations and perspectives. It prompts us to look further into the roles of metaphor in the materialisations and realisations of persuasion, preference and choices in shaping, directing, deconstructing and changing futures by anticipatory designing.

'Metaphors we live by'

Much work carried out on metaphor has followed on from that of Lakoff and Johnson (1980) whose book Metaphors We Live By accentuated relations between language, mind abstraction and experience. As its title suggests, metaphors permeate daily life and are mental and cultural models and practice through which we live. A key issue is the extent to which such metaphors are patent or latent in how we go about our existence, and for design futures literacies for how we imagine and draw futures back

into present lifeworlds. Lakoff (1993) pointed to metaphor as being conceptual and not only linguistic in nature, metaphorical understanding is grounded in nonmetaphorical thinking, plays a major role in the grammar and lexis of language, and is mostly based on correspondences in our experiences.

In 'Metaphors we think with', Thibodeau and Boroditsky (2011: online) note that 'If metaphors routinely influence how we make inferences and gather information about the social problems that confront us, then the metaphors in our linguistic system may be offering a unique window onto how we construct knowledge and reason about complex issues.' Metaphors are also realised in a design sense through multimodality, where language is entwined with or even secondary to focus on movement, speed, embodiment, taste, smell and visual communication and perception. In a more recent futures context of learning in a pandemic, Hearn and Banet-Weiser (2020) motivate for 'scandalous thinking during the conjunctural crisis'.

'Metaphors we design by'

In design inquiry and the emerging pedagogies of interaction design, metaphor has featured considerably since the early 1990s with focus on models and hermeneutics (Snodgrass & Coyne, 1992) and ways metaphor may work generatively in problem setting and processes of social policy formation (Schön, 1993). The growth of computer science and interaction design also took up metaphor in its early configurations with focus on metaphorical design (Halskov, 1994) and relations between methods and the metaphorical in information technology design (Coyne, 1995). Blackwell (2006) writes of the 'reification of metaphor as a design tool'.

Casakin (2007: 24) sees metaphors as key to design problem-solving as well as being heuristics to tackle ill-defined thinking and relates these to early level architecture education and comments on the importance of metaphors for design practice:

> *As expertise develops, along with stronger abilities in analysis, synthesis, and conceptual thinking, the use of metaphors can help to stimulate creativity in design activities. Instead of re-using known design schemas and familiar solutions, the implementation of metaphors in practice can contribute to unconventional thinking and thereby generate more innovative design products. (Casakin, 2007: 34).*

These views are supported by more recent developments in the design of interactive systems, serviced and product relations, such as evidenced a doctoral thesis by Cila (2013) entitled *Metaphors We Design By: The use of metaphors in product design*. Alternative metaphors are also taken up in critical research through design work by Pierce and DiSalvo (2017) to address questions of anxiety in the context of smart and network technologies. The take them up to 'help us see constructs such as clouds, smart homes, and personal digital assistants as metaphors by critically imagining alternatives (fog, cages, and spies, perhaps.) If we indeed want to address network anxieties along with other unwelcome aspects of interactive technology, we may well need new metaphors to do so'. (Pierce & DiSalvo, 2017: 550).

FEATURE 3

Doing design futures inquiry through metaphorical thinking

BY Betti Marenko

EXTRACTS: Edited from IO5 UNIT 05

AVAILABLE: Link ↗

Introduction

The Philosophical Pills are an experiment in post-qualitative methodology: a way of doing inquiry that capitalises on the unknown as a field of potential, rather than imposing a blueprint (St Pierre 2019), and an instance of "serious play of rigorous experimentation" (MacLure 2020) through which uncertainty finds its way into the frameworks and methods of research to produce creative encounters with the unforeseen (Manning 2015).

This chance-based method is significant for a number of reasons:

- It is based on a radical openness to what the future may (or may not) bring, thus counteracting ingrained risk-averse tendencies to predict, control, and prepare for the future (future proofing).

- It disrupts established academic research by leading the participant through an 'unchosen' path where serendipity trumps intention, and where you are called to co-create meaning

- Finally, it wants to make a stand in favour of uncertainty and reclaim it from the rhetoric of contemporary capitalism where it is deployed (together with agility, resilience, mobility, flexibility) as a mode of anxiety inducing neoliberal governance.

Why Pill?

The metaphor of the 'pill' should be read in two ways. On a first immediate level, the pill suggests that these philosophical ideas are like active ingredients, they possess curative properties, they are easily digestible, produce tangible effects, and can be prescribed as fast, reliable, effective and targeted cure to assist design students with their inquiry.

The second layer evokes the 'pharmakon', which in Greek stands for both medicine and poison, something that according to dosage and mode of intake can be either beneficial or disruptive. The ambivalence inherent in the act of 'taking the pill' – where curative properties coexist with side effects or even with the risk of an overdose, and where the remedy may turn to poison – is an appropriate metaphor that reinforces the methodology and the ethos of using a practical philosophical approach that interrogates futures by staying with uncertainty, and indeed turning uncertainty into a material to work with.

The ethos

The Futures Philosophical Pills use chance-based interrogations into the unknown to generate opportunities to make meaning, create inspiration and build knowledge. This 'divinatory' ethos is embedded in their method of use.

By the random selection of one (or more) Pill card and of several Prompt cards users are able to build a random transversal collection of insights, ideas and references.

The way these insights resonate with each other, producing further thoughts, is a combination of the 'chance-based' together with the individual engagement of the participant – and interpretation – coproduction.

Your own way of interpreting the cards that chance has served you, and the content each card has to offer, become a narrative journey to help you reflect critically on your design practice and its future orientations.

On the unknown

... To sum up, the Futures Philosophical Pills we have produced help to imagine and enact a plurality of futures by design. They are:

- Philosophy-in action: working at the hinge between the speculative and the pragmatic.
- Transdisciplinary: Devised by a hybrid team of theorists and designers with design practitioners in mind
- They pertain to post qualitative inquiry – based on understanding becoming
- They do meta-inquiry: they use the unknown to capture the unknown
- They are diagnostic devices: to decode the present as it morphs into futures.

Crucially, while they concern futures, they are 'not about predicting, but being attentive to the unknown knocking at the door' (Deleuze 2006, 346).

▲ Figure 1: Postgraduate students from across UAL engaged in sense-making activity, 7 February 2020. (Image Credit: James Bryant).

UNIT 05 - FUTURES PHILOSOPHICAL PILLS

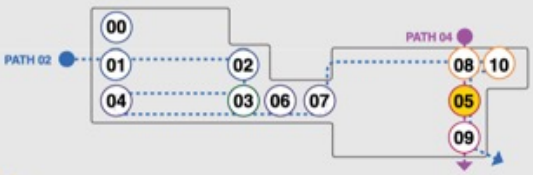
CASES AND EXPERIENCES

Case title: Hybrid Futures Hackathon

Short descriptions: The Hybrid Futures Hackathon took place during the Digital Innovation Season – a series of talks, lectures, events and technical skills workshops bringing together critical thinking and creative expression around the theme of human-machine encounter at Central Saint Martin UAL (October 2020-January 2021). Facilitated and delivered entirely remotely, the Hybrid Futures Hackathon was designed as a platform for community-building, exchange and cross-course learning for UG and PG students engaging with the key themes of the season [How can we re-imagine human-machine encounters?]. A selection of Pills (Animism; Counterfactuals; Decolonization; Heterotopia; Post-Anthropocene; Superstition) were prescribed to mobilize students' different expertise, locate a shared theme/research question, and as a gravitation point to form the hackathon teams with the final objective to land on a research question which would inform the production of short video submissions.

The Pills proved highly versatile as they performed a variety of functions: icebreakers, brainstorming devices, critical lens for the production of the research questions. The Hackathon had a total of 40 participants, with 9 competing teams, 6 shortlisted and 4 winners. Produced by international teams working across several subject disciplines, nationalities and time zones, the videos were showcased during the Hybrid Futures symposium which concluded the season, vividly illustrating, anchoring and counterpointing the debate.

ROADMAP AND CONNECTIONS



The yellow color indicates the position of the current Unit.

UNIT CONTENT

The Philosophical Pills use a transdisciplinary and transversal perspective to articulate call philosophy-in-action or practical philosophy (Deleuze 1988). The key characteristic of this approach concerns working at the hinge of the speculative and the pragmatic so to develop intellectual interrogations that can scaffold tangible design-led interventions which in turn are able to feedback on to speculation. It's important to stress this point: the speculative and the pragmatic are not opposed to each other: pragmatic doesn't mean practical as opposed to speculative or theoretical. Rather, we talk about speculative pragmatism (Massumi 2011): how to stay open to invention and future making (speculative) while staying with what is happening, the now, and figure out ways (methods) to enact this (pragmatism). The 'how' is crucial. It means that philosophy in action is in the business of activating ideas through prototyping techniques that engage with what does not exist yet, that turn uncertainty into modes of knowing, that use uncertainty as an opportunity to create meaning.

The Philosophical Pills are critical lenses to furnish design educators and design students alike with theoretical tools to amplify their capacity to think about possible futures, diagnostic devices to cultivate imagination and introduce different non-existent futures into the present in order to shape practice. This again is a crucial point: to connect these anticipatory skills to design – and design's many ways of seeing, interpreting and enacting the future.

Consolidate into two distinct decks of cards, the Philosophical Pills offer 40 concepts. For each of them a short introduction is available together with key reference texts – written thinking about an audience of design students. While all these terms belong to a repository of concepts that we can use to articulate multiple versions of the future, at this stage this is highly situated work which draws largely on European thought (process philosophy in particular)

Why Pill?

The metaphor of the 'pill' should be read in two ways. On a first immediate level, the pill suggests that these philosophical ideas are like active ingredients, they possess curative properties, they are easily digestible, produce tangible effects, and can be prescribed as fast, reliable, effective and targeted cure to assist design students with their inquiry. The second layer evokes the 'pharmakon', which in Greek stands for both medicine and poison, something that according to dosage and mode of intake can be either beneficial or disruptive.

The ambivalence inherent in the act of 'taking the pill' – where curative properties coexist with side effects or even with the risk an overdose, and where the remedy may turn to poison – is an appropriate metaphor that reinforces the methodology and the ethos of using a practical philosophical approach that interrogate futures by staying with uncertainty, and indeed turning uncertainty into a material to work with.

The ethos

The Philosophical Pills use chance-based interrogations into the unknown to generate opportunities to make meaning, create inspiration and build knowledge. This 'divinatory' ethos is embedded in their method of use. By the random selection of one (or more) Pill card and of several Prompt cards users are able to build a random transversal collection of insights, ideas and references. The way these insights resonate with each other, producing further thoughts, is a combination of the 'chance-based' together with the individual engagement of the participant – and interpretation – co-production. Your own way of interpreting the cards that chance has served you, and the content each card has to offer, become a narrative journey to help you reflect critically

UNIT 05 - FUTURES PHILOSOPHICAL PILLS

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on your design practice and its future orientations.

This chance-based method is significant for a number of reasons

·It is based on a radical openness to what the future may (or may not) bring, thus counteracting ingrained risk-averse tendencies to predict, control, and prepare for the future (futureproofing).

·It disrupts established academic research by leading the participant through an 'unchosen' path where serendipity trumps intention, and where you are called to co-create meaning

·Finally, it wants to make a stand in favour of uncertainty and reclaim it from the rhetoric of contemporary capitalism where it is deployed (together with agility, resilience, mobility, flexibility) as a mode of anxiety-inducing neoliberal governance

Put differently, the Philosophical Pills are a response to the challenge of conducting inquiry when conditions are volatile, times are turbulent, and complexity increases. How do we attend to the multiple instabilities and contingencies of a world in continuous transformation, and how do we capture this unfolding of events within our inquiry? What kind of conceptual frameworks and methodological practices can be used to engage with becoming and all the mess it entails? The Philosophical Pills offers a possible way: by firmly knitting together theory and practice, thinking and making, design and philosophies, the speculative and the pragmatic.

This is not only a methodological but also an epistemological shift: from seeing inquiry based on the analysis of data (and the assumption that data are raw and mute and will acquire meaning only by external coding) to seeing inquiry and knowledge-production as 'diffractive' (Barad 2007) – rooted in the entanglement of theory and practice, of researcher and research, speculative and pragmatic, and in the awareness that as researchers, educators, practitioners we are never external observers but always implicated with the research we are co-producing within the flow of events. Seen in this way, the Philosophical Pills are an experiment in post-qualitative methodology: a way of doing inquiry that capitalizes on the unknown as a field of potential, rather than imposing a blueprint (St Pierre 2019), and an instance of "serious play of rigorous experimentation" (MacLure 2020) through which uncertainty finds its way into the frameworks and methods of research to produce creative encounters with the unforeseen (Manning 2015).

To sum up, the Futures Philosophical Pills we have produced help to imagine and enact a plurality of futures by design. They are

· Philosophy-in action: working at the hinge between the speculative and the pragmatic.
· Transdisciplinary: Devised by a hybrid team of theorists and designers with design practitioners in mind
· They pertain to post qualitative inquiry – based on understanding becoming
· They do meta-inquiry: they use the unknown to capture the unknown
· They are diagnostic devices: to decode the present as it morphs into futures

Crucially, while they concern futures, they are "not about predicting predicting, but being attentive to the unknown knocking at the door (Deleuze 2006, 346)

1: Interrogating Futures (tutor's content)

01. Introduction: Narratives of the Future
In this section students learn about different viewpoints and perspectives that can be used to describe "the Future". This section

UNIT CONTENT

introduces a range of ideas (from western and non-western cultures, and from other fields such as science, physics and ancient philosophy) and definitions of key terms (imagination, anticipation, speculation). The aim is to offer learners a broad understanding of the many ways in which the things called 'future' can be conceptualized and constructed culturally.

02. Why do we need Philosophy?

This section explains the methodological approach underpinning the Philosophical Pills and its philosophy-in-action ethos. It explains the notion of the 'pharmakon' (the idea that something can be both remedy and poison); it positions the Philosophical Pills within post-qualitative modes of inquiry concerning the process of becoming (rather than the essence of being) and methodologies fit for a world that is continuous (rather than discrete), uncertain (rather than determinate) and volatile (rather than predictable).

03. Working with Uncertainty

This section deepens students' understanding of uncertainty (e.g. from physics, risk management, philosophy, epistemology) and suggests ways in which it can be used as a material to work with, including the awareness of the limits of one's one knowledge. Two trajectories are offered: negative knowledge (the knowledge of the boundaries around unknown objects of research); and conjectural knowledge (knowledge that allows for elements of chance and unpredictability to enter the outcome).

04. What are the Philosophical Pills?

This section explains in detail what the Philosophical Pills are: a series of curated philosophical insights to interrogate and challenge established approaches and assumptions around the future and catalyze research. It explains how the Philosophical Pills came to be, and the key purpose of doing philosophy in action by scaffolding the development of design propositions through the means of selected philosophical concepts with the aim to amplify, disrupt and expand existing visions. The broad objective is to push students outside their received notions, prompt them to question and justify their choice, and build increased awareness around the social construction of collective future imaginary, so that they can be exercising a more fine-tuned sense of agency and openness in relation to possible futures.

05. The decks

There are two decks of cards: the Pills deck and the Prompts deck – each containing 40 cards. By combining cards from the two decks participants can create a number of chance-based, situated 'readings', where the philosophical terms (Pills) intersect with directives, questions, provocations and nudges (offered by the Prompts). This process has been designed to open routes for adventurous thinking, conceptual exploration, and playful philosophy-in-action to amplify and disrupt the speculative-pragmatic hinge and inform design practice.

2: Taking the Pills (workshop) - see above section 06 for details

◄ Figures 2 & 3: The Futures Philosophical Pills and content from UNIT 05, IO5 FUTURES LITERACY METHODS. (Image credit: FUEL4DESIGN).

▲ Figure 4: 'Do you see the glass half empty or half full?' Betti Marenko and student participants. The 'Hacking Futures - Futures Hacking' Philosophical Pills workshop at Central Saint Martins, UAL, 7 February 2020. (Image credit: James Bryant).

Akin is attention to hybrids (as noun) and the alternative techno-feminist metaphor of coproduction (as verb) in understanding interplays of digital and analogue, human and machine in ongoing developments and open, multiple and generative change outcomes (Devendorf & Rosner, 2017). These researchers write that:

> *With the continual intertwining of nature and artifice questions concerning the role of digital technology in previously non-digital domains not only prove critical to theorizing the human-machine interface, but also offer a means of designing otherwise—in locations and moments of collective work that address a wider arrangement of humans and technology. Focusing on craft, we have seen how the alternative metaphor of co-productions may animate new possibilities for design like considering environments as makers, collective (human and non-human) experiences, ephemeral forms, and resituated histories. … What is being "tinkered" within these alternative formulations is not just stuff, but also selves, relationships, collectives and cultures. (Devendorf & Rosner, 2017: 998).*

Such work seeks to change the margins of design and to tangle with productive dissonance and challenging norms in design (see also the final chapter in Volume 1 entitled **Otherwising Design Futures Learning**).

Metaphors are also central to the design of hybrid materialities and forms of digital artifacts and the remediation of conventions and exploration of affordances (Jung et al., 2017). They claim that:

> *…forms and meanings of artifacts are connected across various material domains and that metaphors implicitly or explicitly play a key role in bringing a new design perspective from one domain to another, sometimes reified as design conventions. Our investigation extends the perspective on affordances from perceivable action possibilities to invitations for interpreting forms and meanings of an interactive artifact. We also highlight the role of metaphors as a systematic strategy for exploring materialities and affordances of digital media. (Jung et al., 2017: 43).*

Recently, co-published metaphor-related interdisciplinary works have appeared in HCI and Design conferences. Logler et al. (2018) address ways of making and using a generative metaphorical design toolkit and applying it in a case study in using linguistic metaphor in early stage design pictorial work. Central is a four-step design process: (Logler et al., 2018: 1376) as follows: 1) familiarise (capturing rich experience), 2) metaphorize (composing a set of generative metaphors), 3) concretise (making metaphor cards) and 4) explore (bringing metaphor cards into design research). Design Metaphor Cards are characterised as creating 'shared understanding of the metaphor's vehicle, make connections between the vehicle and tenor explicit, legitimise the metaphor within a specific domain, and offer bridging concepts to support initial explorations with the metaphor.' (Logler et al., 2018: 1384). Further, metaphor cards can develop a joint language and help direct topics and agendas. Projected is possible use in policy settings, and transportation, with attention to concepts such as choice, service and payability [→ SEE **FEATURE 4**].

With similar pragmatic interest, in 'A workshop method for generating ideas and reframing problems in design and beyond', Lockton et al. (2019) were keen to work with participants creating and finding patterns where metaphors 'can be a map to a territory, but should not be mistaken for the territory' and can be put to use in disruptive improvisation (Lockton et al., 2019: 322). Their interest is in ways generating new metaphors 'could inspire creative approaches to designing novel interfaces, products, services, communication campaigns, ways of explaining ideas, and more widely, reframing of societal issues around technology and other issues of global importance, providing an expanded "conceptual vocabulary"....' (Lockton et al., 2019: 322).

Together they see such methods as adding to the designers 'toolbox'. However, they note that this is no simple feat as metaphorical design is still sparse, highlighting that of Logler et al. (2019) mentioned above. Their own methods in New Metaphors cards, under Creative Commons licence, offer rapid associative play for stakeholders and specific interests by way of text and image cards. Such metaphorical methods and devices are also seen to open out ways to reframe critical, pressing issues and stakeholder participation in shaping further mental models, futures thinking and transitions in change, extending to designerly processes (Lockton et al., 2019: 329).

Elsewhere in design inquiry, Dudani and Lockton (2021) also address matters of metaphors in system-oriented design. Recent technology located views on metaphor have extended to human-robot interaction (Alves-Oliveira & Luptenti, 2021) and to metaphors in ways designers may work with Artificial Intelligence (AI) (Murray-Rust et al., 2022). Metaphors are central to communication of complex systems and mediation and projection of their techno-futures.

'Metaphors we anticipate by'

Work on metaphor and HCI is typically futures-oriented. However, it differs slightly from that with a more futures and foresight perspective. This we take up below. However, we do so under the notion of 'metaphors we anticipate by' to accentuated our own anticipatory design perspective in FUEL4DESIGN that distinguishes design futuring making with analysis from more social science foresight research on futures.

The latter does include important work on metaphor, principally that of Inayatullah (1998), and his Causal Layered Analysis (CLA) approach that entails myths and metaphors amongst its 'six pillars' of working with futures. These include: mapping, anticipating, timing, deepening, creating and transforming the future (Inayatullah, 2015) and also extends no non-western contexts.

In Inayatullah et al. (2016: 111), Izgarjan reminds us that metaphors all too often communicate dominant narratives and that attention to metaphor in CLA is about developing critical readings around structures and tropes, such as on feminist positions, cultural and geopolitical colonisation. The aim of CLA (Inayatullah, 1998) is to work to provide alternate futures and scenarios in which metaphors shape and even disrupt strategic organisational change and support ecological framings and pathways (Inayatullah, et al. 2016: 110-111).

FEATURE 4

Making meaning with metaphor, words and in/tangible tools

BY Palak Dudani

ACTIVITY: BALLUSION and PhD workshop F2F mode

BLOGPOST: 16.11.2020. DESIGN FUTURES LEXICON.

AVAILABLE: Link ↗

Shaping malleable futures

BALLUSION looks at the role of words, language and metaphor in design projects and its relation to futures. As we note in our Unit on this in the LEXICON:

When we talk about the future, we refer to something that lies ahead of us in time. As designers, we're invested in affecting, changing and shaping this 'future'. However, the 'future' is an ambiguous and intangible concept. Using a metaphor to describe the future allows us to make it tangible, making it interesting for us to experiment and play with it.

The BALLUSION workshop explores 'balloons' as a metaphor for shapeable futures. We take this up in the supporting Unit by asking: 'If the balloon represents the future, how might we shape, twist, deflate, go, squeeze, bounce, tap, stretch or release it?'

By treating words as design material, participants cut them out into small strips. These are inserted into balloons and blown up, thereby sending the words into future. The words are brought back to present by popping the balloon and using the fallen words as inspiration to reflect on their design projects.

Identifying Needs and Interests, PhD Workshop #1. BALLUSION, AHO, 28 February 2020

Teachers and facilitators: Andrew Morrison & Palak Dudani

The workshop was designed with PhD students in mind. The aim of the workshop was to explore the use of words in shaping concepts in a PhD thesis, clarify the project's focus in the early phase and position it in relation to the future.

This workshop was initially designed as a face-to-face event and was conducted during early March, before the lockdown period. As the lockdown period went into extension, our project team negotiated this to create a digital version for this workshop.

The version shown here gives insights into how we did this learning process together. The revised revision is shown in the UNIT 4.2 LANGUAGE AND METAPHOR.

In this post we share how we conducted the workshop and its key activities and we also share the resources, we used along the way.

▲ Figure 1: Balloons as metaphor for futures, twisted and made into different forms, suggesting the malleability and precariousness of futures. (Above; photo: Yue Zou).

▲ Figure 2: Preparing the in-person workshop at AHO. (Below; photo: Palak Dudani).

Starting with terms from the LEXICON

The PhD students looked at 250 FUTURES DESIGN WORDS and TABLE OF SEMANTIC CATEGORIES as a way to find futures words that relate to their project.

They select a word and write them onto the balloon. They play with the balloons, shaping them into forms that reflect the character of their projects.

Playing with the 'futures' as balloons

In the following phase of the workshop, the metaphor of 'balloon' is used as a way to articulate the futures positioning or what kind of futures the PhD students are working towards.

Students received balloons filled with words. As they popped the balloons, the words fell onto the table, brought into the present.

What does it mean to bring words from the future and about the future, into the present? Discussion followed.

◄ Figure 3: One of the student participants going through a list of 250 FUTURES DESIGN WORDS. (Photo: Palak Dudani).

▲ Figure 4: Student participants selecting words relevant to their PhD project and writing them on their balloons. (Top; photo: Palak Dudani).

▲ Figures 5 & 6: Student participants playing with balloons, shaping them in ways to reflect their projects. (Below; photos: Palak Dudani).

5. REFLECTING ON LANGUAGE AND METAPHOR

ACTIVITY #7: BACK FROM THE FUTURE

The balloon is the metaphor for the future, and contained within it are words. The words inside the balloon represent words in the future. To be able to see/touch/have them you need to bring them down to the present.

1. Pop the future/balloon so the words (or materials you'll use to articulate/shape your design) 'fall' to the present.

2. Which of these 5 words would you bring back from the future?

3. Relate them back to your project/course/discipline. How do these words work to prompt, project or even propel your project into the future?

▲ Figure 7: The workshop is divided into sections and activities, as shown here in a screenshot of the UNIT 4.2 LANGUAGE AND METAPHOR on the FUEL4DESIGN website.

▲ Figures 8 & 9: Images showing student participants cut the words relevant for their project. (Photos. Palak Dudani (left) and Claire Dennigton (right).

Next, the participants chose their own 10 words relevant to their PhD project. They cut them into strips and inserted them into balloons. Once inserted, these represented words in the future. In order for them to be seen and touched or accessed, these words needed to be brought down to the present. The students popped the future/balloon so the words would 'fall' to the present. These words are the material students could then use to articulate and shape their project. Popping or releasing or taking away the balloons was like sending them into the future.

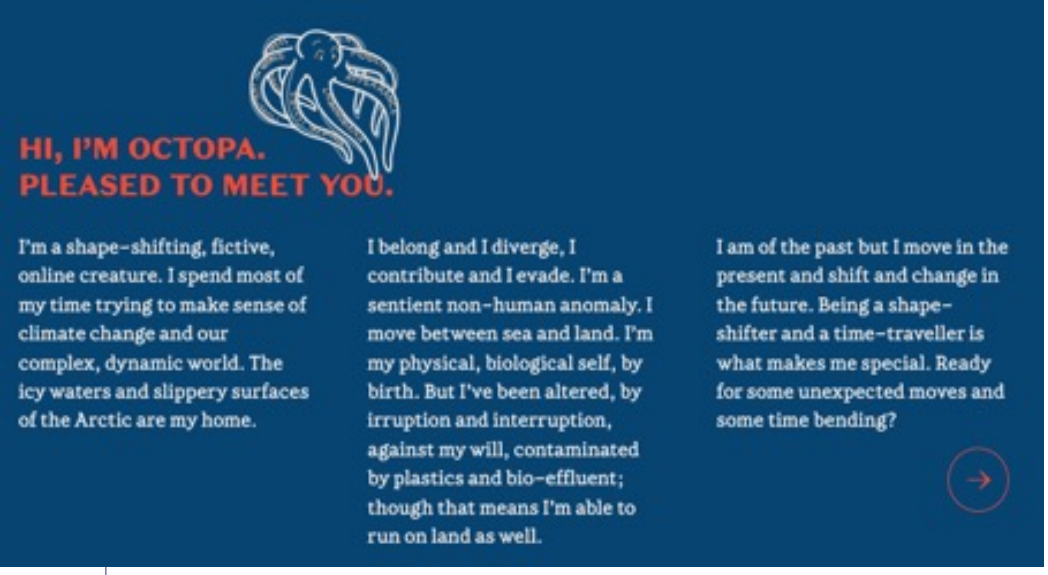
Reflecting on language and metaphor

Quiet individual writing was part of finishing the workshop. The students selected five words from the fallen words and reflected on their definitions in relation to their project. A few more balloons were also popped.

▲ Figures 10 & 11. The cut-out words were inserted into balloons and 'sent into future' (above left). Popping the balloons, made the words within the balloons 'fall back into present' (above right). (Photos: Palak Dudani).

▲ Figure 12: PhD student writing definitions for her chosen words, reflecting on how they relate with her PhD thesis project. (Below). (Photo: Palak Dudani).

'In working with metaphor, lexis and context, the physical workshop version embodied the essence of bringing something into existence, from of our heads and orientations out into the world, from my understanding of the Sanskkrit 'patati'. I'm reminded too of the Hinthi word 'to study' or 'pardina', with the root in the term 'part' meaning to fall from nothing to something. For me this was clearly output shaping anticipatory learning relations words and concepts have disciplinary location, definitions and are realised through contextual meaning'. (Palak Dudani).



◄ **Figures 5 & 6:** Screenshots from octopa.org that link applied literacies experimentation in design with artistic research.

The view is that changing the metaphor can help new pathways emerge. However, we need to heed warnings, such as Difva and Ahlqvist (2015) announce, that foresight work may contain metaphors of power struggle that may be infused with who is steering its direction. In contrast, looking to six metaphors in developing a service model for systems-oriented foresight (the oracle, machine, garden, open space, power struggle and labyrinth), Dufva and Ahlqvist (2015: 7) argue that:

> *… the metaphor of labyrinth highlights unintentional power structures. Often there is a tendency to build new structures, new committees without dismantling old ones. This can lead to a maze of structures, where there are several groups doing foresight, relatively isolated from each other. Futures knowledge and capability is not shared leading to a lot of overlapping work. The metaphor of labyrinth also reminds that foresight is part of other activities, not a separate task for a separate committee.*

Such shared knowledge building on futures through metaphor is presented in terms of sense making, strategic intelligence and dynamic capability building. We would add that such views can be positioned more fully as a mode of supporting active, critical and creative design futures literacies.

Metaphors can be culturally specific yet they can also be about universal human mental modelling. Equally, they are semiotically important in futures inquiry. Tarasti (2016) discusses metaphors in relation to specifically existential semiotics and three kinds of transcendence (empirical, existential and radical) with the latter two opening up anticipatory potentials. Here, metaphors concern time and scenarios especially.

In working with old and new metaphors Kuusia et al. (2016: 126) focus on metaphors and the concept of litany. They demarcate litany as 'a written, spoken or pictorial text that anticipates the future or suggests future relevant action(s)' and study assumptions and anticipation behind them, concerning systemic causes and world views, and in long-standing and internet located metaphors leading to application in futures and language constitutive scenarios.

Metaphors are seen, following Inyatullah (2004), as concerned with deep stories and archetypes where language works evocatively and emotionally through visual images (Kuusia et al., 2016: 128). This is illustrated via analysis of a text from the Voice of Russia on the Northern Sea Route from 2014, described for example in metaphors such as an artery and the melting of sea ice allowing navigation as a 'gift' to the Russian people. (Kuusia et al., 2016: 129; see also final chapter in Volume 1: **Othwerising Design Futures Learning** and the 'Octopaltas': **Link ↗**).

Concerning the projection of future navigability due to climate change and stately stewardship of an emerging 'avenue', trust is discussed more fully in terms of it being earned and as risk taking, and its situational and cultural framings. On this score, Trarasti (2016: 16) argues that avoidance of cross-cultural misunderstanding may be achieved through attention to existential semiotics and inferential and exploratory futures-oriented inquiry in which metaphor features. Inyatullah et al. (2016: 114) state that 'metaphors play a key role in framing issues and thus in defining how we decide to act and play our roles in creating the future'. Further, Inayatullah (2015: loc 4973) concludes that '... over time we have found that all levels are important, working at the metaphorical – the narrative level can lead to the most profound change.'

This is mentioned in regard to replacing the notion of 'used futures', being ones that we need to divest ourselves from by means of creative, transformative activities by using new stories and metaphors to materialise shifts in world view and systemic change. Here metaphor conveys cultural codes and works through worlding activities, including role play (Inayatullah, 2015: 5052). It may be used to offer alternate narratives to the commercially constructed techno-futures from 'Silicon Valley' by offering alternate futures.

In terms of design, futures and the 'crisis' of migration into affluent nations, work has been taken up with a diversity of stakeholders such as government departments and university staff, such as on restrictive 'nation as body' metaphor used to 'naturalise' challenges to asylum seekers and policies in Australia in terms of 'contamination' and 'drowning' metaphors and alternative more positive discourses, practices and experiences (Bin Larif, 2015).

In our own work on metaphor, persona and counterfactuals, critical speculative design narrative is elaborated in the final chapter. Our focus is on the Northern Sea Route and a more fully developed version of personas, canvases, participative scenario experiences and strategic follow-up work to shape critical situational literacies around geopolitics, power and climate change [Figures 5 & 6]

Recently, Fisher and Marquardt (2022) have explored links between critical Futures Studies and experiential futures by way of metaphor situated in Systemic Metaphor Analysis (SMA) using a sci-fi role play game to escape probabilistic thinking and reconstruct metaphors of AI. As a methodological entry point and a means to exploring technological pathways, SMA is elaborated as working with a pluralising hermeneutic rather than single one. Attention is given to the synthetic, abductive and self-reflexive in context (Fisher & Marquardt, 2022: 64-65).

'Metaphors we learn by'

Parents and children, teachers and students all use metaphors in daily communication and processes of learning and teaching (Badley & Van Brummelen, 2012). Metaphors are used to help build mental models of our immediate settings and experiences as well as to help us fathom our ones beyond our grasp, in the zone of the not-yet, the ephemeral and the indistinctly alluring, troubling and emergent.

Metaphors function verbally but also multi-modally and are a central part of helping meaning making that also concerns futures and anticipatory thinking. Ortony (1975: 53) writes that:

> *The great pedagogic value of figurative uses of language is to be found in the potential to transfer learning and understanding from what is known to what is less well known to do so in a very vivid manner. To appreciate this fact maybe to make better use of them to better understand them. Metaphors are necessary as a communicative device because they allow the transfer of coherent chunks of characteristics – perceptual, cognitive, emotional and experiential – from the vehicle which is known to a topic which is less so. In so doing they circumvent the problem of specifying one by one usually often and nameable and innumerable characteristics; they avoid discretizing the perceived continuity of experience and are thus closer to experience and consequently more vivid and memorable.*

For design futures literacies, there is great potential to further explore 'metaphors we learn and teach by' (e.g. Hard et al., 2021). Our shared task could be to explore their structural and poetic character in a design futures view and ways they may be analysed further as to what they might contribute to anticipatory design pedagogies across a diversity of tools, techniques and methods [Figure 7], as taken up by Diez, et al. (2020).

▲ Figure 7
Screenshots of cards in the Weak Signals card deck. Wildcard deck shown. Master's in Design for Emergent Futures (ELISAVA, IAAC). (Image credit: Fab Lab Barcelona).

4. Play and cards in design futures literacies

BY Andrew Morrison, Palak Dudani, Corbin Raymond & Vlad Lyakhov

Play and design for learning in serious times

In this section we turn our attention to play and card games in shaping design futures literacies in uncertain contexts of change. Including play in design futures literacies points to ways in which curiosity and engagement may be motivated and enacted and connected with hope and potential options and unfolding. In our wider project view, design futuring and its imaginative, exploratory character needs to build on activities that allow ludic, quirky and unexpected ways to investigate and embody the unseen, uncertain, unfamiliar and unknown.

This section focuses on cards, not online or desktop computer games [→ SEE FEATURE 5]. . Play, games and game play have become a key part of contemporary consumer leisure experience and popular culture. Location-based games and massive online formats and processes have expanded in one of the largest components of global digital and distributed, participative commercial media. More recently this has been conveyed through simulated and augmented and mixed reality modes of engagement and embodiment, connected to social media. Dynamic media and experiential immersion are central to the pervasiveness of the lifeworlds being both co-created and marketed.

Card games, widely used in design and increasingly in design futures work, seeks to shift engagement into modes of 'gameplay' so as to allow possibilities and reconfigurations to appear and be taken up, as fresh and as risky materialisations of sources and resources that might be re-positioned in plural futures views. This contrasts to the drives for control and demarcated decision in strategic futures decision-making. For designers, there is a need to open out fuzzier and emergent spaces so as to be able to explore their diverse nature and options, expose their characteristics and make trouble with their assumptions. Foresight goes from planning and needing to know, design fiction, anticipatory articulations are about radical and even ludic imaginings.

FUEL4DESIGN has explored playful futures design pedagogies in all its work packages in shaping anticipatory design literacies. This we have dome despite a global pandemic, for example in a PhD speculative design and climate change project on 'smelling the future' (e.g. Zou & Morison, 2022) In the DESIGN FUTURES LEXICON, for example, the paper and digital versions of BALLUSION invite different ways of learning playfully about more serious design projects and contexts. The FUTURES PHILOSOPHICAL PILLS constantly ask students to hold and make sense of decks and 'suites' of positions in orienting themselves in clarifying their interests and directions. Our tools and their uses have sought to engage

learners in energies of play and playful processes of learning about serious matters, including their own meta-literacies whether conceptual or linguistics, philosophical or methodological.

We have also worked with pastiche and irony in speculative design futures doctoral research and the building of related futures literacies resources with allied projects such as Amphibious Trilogies between art, design and social science. The interface and content of this project website draw on inputs from the LEXICON on movement words and kinetic discourse relations, and is an instance of how dynamic interfaces may engage us not just clicking on a blog post, but in our actions seeking how a communicative, informational and multimodal polyverse moves differently each time, meandering and moving, drifting and swirling in a sea of relations, less solemn more playful, always offering different pathways and future readings.

Extending to personas, we have been keen - through contributions from the LEXICON and influenced by the need to better position our pedagogies in being inspired by the PILLS – to include queer identities and characterisation as means to developing engagement in working with systemic and geopolitical issues. Here subversive tones and playful posturing invite identification and affinity as well as announcing deviance and dissembling. Students and teachers in an OCTOPA workshop also used Spatial Chat as a platform that allowed movement and self-assembly as part of travelling a digital and ludic interface where counterfactuals abound in a non-mimetic map of the contests over the northwest European Arctic.

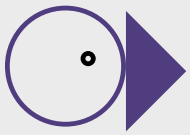
While 'edugaming', and the gamification of education are taken up critically and performatively, in design education, research and professional practice, design cards, typically in print and face-to-face-mode, remain central parts of engaging participation. In the context of discussing the 'gaming of futures literacy', Candy (2018: 234) observes that '... just as games are venturing into serious territory, the at times overwhelmingly serious practice of futures has been learning to be more playful.'

At the same time, however, the global climate crisis and related environmental, socio-economic and political concerns, place of design classrooms in a gloomier pall. What then might design cards be taken up to do in contributing to and changing our design futures literacies and pedagogies? How might we work with them to question and even disrupt given expectations and practices? Might they instigate a sense of curious designerly critical play into the anticipatory dynamics of learning together? What might we be able to put into play as it was through working with design cards in a futures literacies by design mode?

These were some of the questions asked in the project and that we to a large extent addressed in three different work packages. In this section we seek to connect them a little more descriptively and analytically. First, we position what and how design card games appear, are used and imply. We then look specifically at one strong futures card game before presenting and discussing our three initiatives to include design cards in our own emergent futures pedagogies. They were a parallel part of a wider suite of tools and means to exploring how to support and facilitate design futures literacies in

FEATURE 5

On card-based design tools



BY Andrew Morrison

Background

Deployed as far back as the 1950s, design cards have been widely taken up ones such the as the Oblique Strategies original pack (Link ↗) designed in the mid-1970s by the musician Brian Eno in 1975. Design cards have had been pervasive in design classrooms and projects and they have been widely marketed and taken up in design consultancies and strategic design business activities.

Such card have been characterised as catalysts for opening out imagination and for supporting acts of design envisioning (Friedman & Hendry, 2012). This is patently so in the instance of IDEO's Methods Cards (Link ↗) that are only available from a book store in San Francisco in the USA. This set of 51 cards were developed via a diversity of educators and students, businesses and designers. They are offered as a set of inspirational design tools that present methods to 'keep people at the centre of our design processes' (Link ↗).

Cards are widely used and discussed in design education, with limited discussion and analysis of their strengths and weaknesses. In design education, practice and research, cards first took physical form, and have been both commercially produced, and are now widely taken up and in digital and physical forms, for collaborative activity (Lucero, et al., 2016) and in terms of positioning.

Five main categories

Wölfel and Merritt (2013) sketch out a design space for design methods cards through providing a survey of 18 well-known card tools at the time. They arrange these and their differences according to five main categories: Intended Purpose & Scope (general, participatory, context/agenda), 2) Duration of use and placement in design process (anywhere/anytime, beginning of a process, specific point), 3) System or Methodology of use (no methodology, suggestion for use and specific instructions), 4) Customisation (none, trivial, optional, required) and 5) Formal Qualities (only text/only image, text and images, structural categories, virtual component). These categories remain applicable in the development and analysis of design futures cards geared towards supporting design futures literacies. Wölfel and Merritt (2013) found that few cards allowed for customisation, with room for digital augmentation and space for exploring further connecting physical and digital tool relations and elements.

Recent reviews

However, more recently in a review and analysis of 155 card decks, Roy and Warren (2019: 149) note that 'The largest proportion of decks aimed to facilitate creative problem solving (25.8%), followed by tools for domain-specific designing (25.2%) and for human-centred design (23.9%). There were a smaller proportion of decks to aid systematic design processes (11.6%), team working (9.0%) and futures thinking (4.5%) ….' Further they observe that many of these decks have been taken up and used by the parties that design them and that there is room for more independent analysis. In summary, they found that design cards were meant to do different work '… from providing creative thinking prompts and digests of good practice or design methods, to offering checklists of issues to be addressed and concepts and solutions for specific design problems.' (Roy & Warren, 2019: 150).

Aart et al. (2020) conducted a two-part study (a systematic literature review and card sorting interviews with design students) that led to criteria for a framework of card sets. For Aart et al. (2020: 425) in design, essential are not only the card content but processes of use of the cards. They see that we need to understand cards as a communicative medium, 'Designers naturally sort and group cards due to their tangible nature, making them a very different medium than other media that are used to spread design knowledge.' Design cards are patently tangible tools on their physical form; however, as we cover below they may also be put into play as digital and generative tools through which futures may be prompted and projected as part of our changing design futures pedagogies.

Extending contexts of use

In recent years the burgeoning use of cards in designing and design research has spanned the creation of game design processes through the use of design-driven exertion cards in the context of HCI and embodiment (Mueller et al. 2014) to ideation cards for mixed reality game design (Wetzel et al., 2017). With such focus on interaction design, attention has also turned to the design and uses of cards in supporting designers in working in a sharing economy frame (Fedosov, 2019; Fedosov, 2022). Perhaps unsurprisingly, attention has also been shifted to the uses of cards in contexts for care and community, with focus on alternative care paradigms (Martino, 2021) and in contexts of engaging in design and matters of sustainability (see Ræbild & Hasling, 2017).

Design cards engage us in symbolic, mediated acts of playful meaning making, guided by their rules and their socio-material referents and the performative and experiential activities of gameplay. Casais et al. (2019 remind us that they can be put into play to promote and support value in use through design where happiness is the key goal. Equally, different, preferable and possible, better futures also might be the point to reach towards in card dynamics that may be activated to facilitate engagement and hope as opposed to modes competition and conquest that typify them.

diverse contexts but also more generally in the light of needs to work towards shaping long-term sustainability where engagement and serious play (Flanagan, 2009) in our view need to be connected.

On cards, design and 'gameplay'

Card-based design tools have been widely taken up in design, design education and research, often in physical form and through known genres of decks and stacks along with rules and roles in directed activities of dynamic gameplay, in analogue and digital forms (e.g. Peters, et al., 2020). Accordingly, their intentions, game logics and uses have varied due to their motivations, aesthetic and experiential structuring and their enactable and performtively embodied materialisation of world views and modes of directing preferences and opening out options [→ SEE FEATURE 5].

Card-based design tools have also been influenced by ways they work to support and facilitate processes and activities of worlding, and this has in part extended to future shaping. Key advantages of cards as design tools have been summarised by Deng et al. (2014. 696) as helping discussions, supporting different views on a design space, speed and refine ideation and iteration, contribute to a shared vocabulary, allow for physical manipulation and reference in discussion as part of wider exchange of design ideas, engagement and communication.

In our experience, design cards, and by extension their futures orientation and specific design for anticipatory learning and participation, offer engagement and action through their knowledge framing activities and related dramaturgical dietetics. However, design cards have not often been analysed in terms of their related design literacies. Indeed, at times they have been criticised for being seen as 'naturally playable' in which their decks, 'suits' and dynamic play are not analysed in terms of the world views their co-constructionist dynamics they enact.

Candy (2028: 242) reminds us that in order to move our foresight and anticipatory thinking onwards more clearly with limits and boundaries that support engagement, one way is 'to invite gameplay with the boundaries and parameters (assumptions, causal chains, narrative premises, themes, etc.) that frame particular conceptions of times to come.' However, discussing cards. Design and Human Computer Interaction (HCI) in particular, Aarts et al. (2020: 419) reflect that '... little information can be found that guides future designers as potential users of such design cards in identifying such cards and selecting the ones that are most fitting for their specific design challenge.'

Gameplaying, futures and design cards

Play is central to design cards. It provides a foundation for their material choices and mediational forms. Ludic logics, performative rules and gameplay structure the dynamics of games (Flanagan, 2009), including that of design cards. However, concerning a wider reaching and longer-term view on foresight, futures and anticipation, there are few examples of design cards that more discursive and critical in character than the majority of more declarative and decision oriented ones.

One exception instance is the *Thing From the Future* (Candy & Watson, 2015). This card game works as a prototypical prompt towards a gaming of futures literacy. It is a key example of how design cards may be oriented towards anticipatory concerns in a mode of imaginary experiential and combinatorial foresight.

Designed for 1-6 players in face-to-face and paper-based mode, 'The object of the game is to use the cards to generate the most interesting, funny or thought-provoking ideas for artifacts from the future. There are over 3.7 million possible prompts in the deck.' On reflecting on the design of the *Thing From the Future*, Candy (2018: 235) reflects that the tool is 'Part scenario generator, part design method, and part party game it invites players to collaborate and compete in describing, telling stories about, and sketching or physically prototyping artefacts that could exist in alternative futures.'

Groups of players themselves create a prompt and need to describe a related artifact from the future thereby revealing more about their perceptive and projected world making and its articulations in and through present-day conceptualisation and uses of products and services. s

Drawing on Dator's four generic futures, four suits are in play: Arc (time), Terrain, (context) Object (thing) and Mood (affect). This was then simplified in a revised version to: Future, Thing and Theme (Candy and Watson, 2017; 2018). These three archetypal like elements can be synthetically related to each other at different levels in a wider 'reverse archaeology' (Candy 2018: 239).

One of the key issues arising through massive use and feedback has been to work further with relating the enjoyable randomness in the performativity of playing the cards and responding to contexts of use and application. Overall, Candy (208: 240) observes that:

> *What The Thing from the Future offers as a futures method might be said to consist in the way its design and storytelling engine operates mostly unseen 'under the hood', with the effect that without great effort, players can engage in a quite sophisticated form of integrative, imaginative thinking, embedding abstract future-narrative notions in particular concepts for future things, all while actually enjoying themselves.*

More than playing the hand you are dealt

For design students design cards with a futures bent offer inbuilt affordances and communicative potential. They relate to canvases and situations of framed use yet remain open to being played. This play, however, when framed in an activity and process-centred approach to anticipatory and relational methods, centred on context, needs, emergence and uncharted outcomes offers spaces for recombinatorial permutations and perhaps unexpected arrivals, in working towards such spaces of anticipation, we invite learners into mixed modes of embodied and affective engagement.

Candy (2018: 239) comments that:

> *… a game format or framing can be helpful in and of itself for the futurist facilitator seeking to trigger a hypothetical, exploratory mindset, affording players not only permission to think along heterodox lines, but offering the specific materials of imagination with which to do so. The cultural norm associated with card games of literally "playing the hand you are dealt", rather than rejecting the terms of the hypothetical – a common problem when working with future scenarios in more prosaic formats – also may help players grant permission to themselves to range into previously uncharted imaginative territory. (Candy, 2018: 239).*

However, in our experience in working more specifically with terms and concepts, world views and framings, scouting techniques and mediated materialisations, this is more than simply a matter of 'all hands-on decks'. Let's go back a minute to the Thing from the Future. Candy (2018: 242) writes that '… what it attempts is to make a kind of generative "source code" for boundary-drawing in futures available to more people' and that prompts '…that confine and challenge the imagination in each round of gameplay present a pathway disclosing potentially brand-new vistas unimaginable until one ventures along it.'

In FUEL4DESIGN we took up design cards actively in the new tools and learning resource development in three of our work packages. These are featured below. It wasn't part of an explicit project plan that we would take up design cards as one of our cross-project tools, yet they featured significantly in three of our work packages. We did so in a mix of the physical, digital, and hybrid in collaborative meaning making (see also Lundqvist et al., 2016). Full print and digital version are available in our project website for open use.

Below, we present the visualisation of design cards from the FUTURE PHILOSOPHICAL PILLS from I02 in use following their redesign in a second generation outcome that was implemented after then main lockdown of the pandemic **[→ SEE FEATURE 6]**. A blog post from the DESIGN FUTURES LEXICON in I0 provides a designer-teacher's reflections on using the REFLEXICON **[→ SEE FEATURE 7]**. We also present an account of how cards relating to the 'Atlas of Weak Signals' in I03 were taken up in a diversity of collaborative pedagogies **[→ SEE FEATURE 8]; [Figure 8]**.

Peters et al. (2020: 21-22) summarise possible developments in tool development, including cards, as involving 'attention to value sensitive design, highlighting of cultural-tailoring, greater inclusivity and study of why designers do or do not use tools in practice, further customisation, attention to embodiment and tool efficiency evaluation'. The 'hands of cards' dealt in these **FEATURE** may be assigned, distributed, chosen and connected differently to what we present here. We have not played these cards together in a joint workshop. Nor have our students tried them all out in one venue and compared their intentions, applicability and suitability to their specific design projects at a wider and holistic scale. These options, amongst others, remain available for development and use beyond our design and direction.

▲ Figure 8
Screenshots of cards in the Weak Signals card deck. Areas of Opportunity card deck shown. Master's in Design for Emergent Futures (ELISAVA, IAAC) (Image credit: Fab Lab Barcelona).

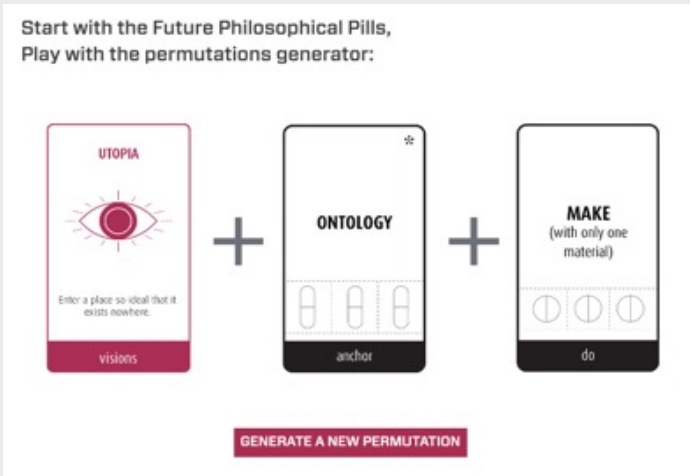
FEATURE 6

Futures Philosophical Pills: Visualisation of the cards in use

BY Betti Marenko

▲ Figure 1: Browsing the instructions and getting ready to play. The final iteration of the deck ran by Hybrid Futures Lab. The Future Philosophical Pills workshop at Central Saint Martins, UAL, 10 May 2022. (Image Credit: James Bryant).

◄ Figure 2: A journey to create an 'otherwise future' or an alternative present': card decks assembled and ready during the final iteration of the deck ran by Hybrid Futures Lab. The Future Philosophical Pills workshop at Central Saint Martins, UAL, 10 May 2022. (Image Credit: James Bryant).



▲ Figure 3: Working with the Research Prompts to kick-start world-building. During the final iteration of the deck ran by the Hybrid Futures Lab, we finally returned to physical/ in-person mode. The Future Philosophical Pills workshop at Central Saint Martins, UAL, 10 May 2022. (Top; Image Credit: James Bryant).

▲ Figure 4: The cards in digital mode (repurposing software from the LEXICON). (Bottom; Project website).

FEATURE 7

REFLEXICON and PhD workshop in online mode

BY Palak Dudani

BLOGPOST: 19.11.2020

AVAILABLE: Link ↗

Designing with futures terms

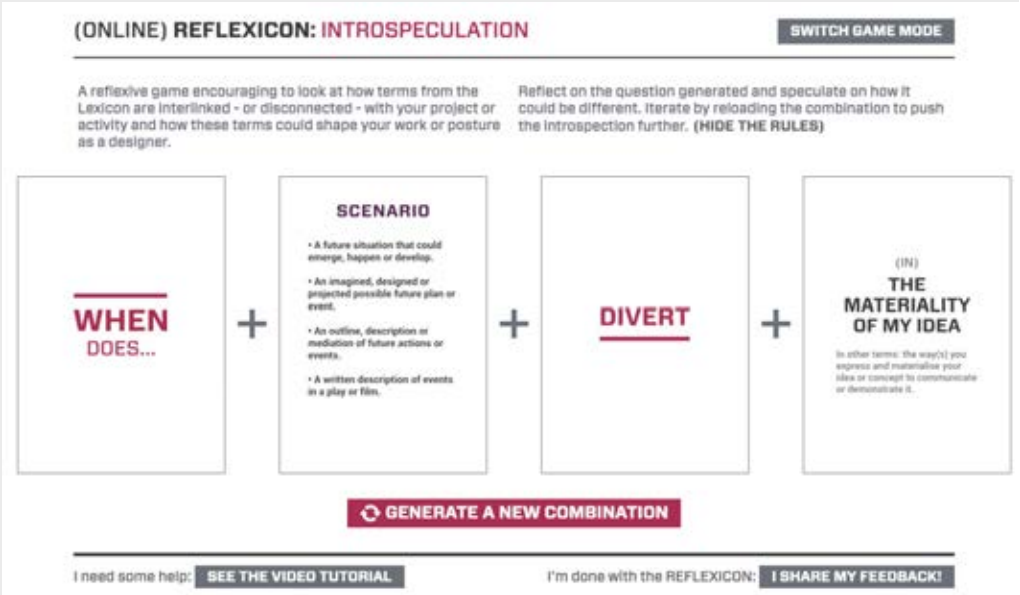
REFLEXICON builds on the Lexicon of the Future Education and Literacy for Designers, and invites designers to play with future terms. It uses game play as a way to support designers on use and application of Futures Design terms and reflect on how their design project or activity work might relate to shaping future needs, conditions and challenges.

As the Unit 7.2 REFLEXICON notes:

With its three game modes, the REFLEXICON invites designers and designer-researchers to understand how the terms from the Design Futures Lexicon already interact with their practice and how they can strengthen their project work through future-proofing.

As the name suggests, playing the REFLEXICON is itself is a reflexive activity: doing so won't produce results and ideas for a project. This is really about thinking in a deeper way about the practice of design or the work currently underway or planned and how to think reflexively about the nature of design research.

The REFLEXICON was initially designed as a card game for individual or group use in a face-to-face event. After the lockdown, the The REFLEXICON was redesigned into an interactive digital game, reusing card game-based codes to help explorations with the content or words of Lexicon in a reflexive way. In order to make it possible to play the game in both physical and digital settings, the REFLEXICON page now contains both a print-ready PDF version of the cards and the digital interactive version for online play.



▲ Figure 1: A gif of the REFLEXICON digital interactive tool. (Top; Project website).

▲ Figure 2: The card based REFLEXICON game. (Bottom; Photo Bastien Kerspern).

FUEL4DESIGN Project (ERASMUS+) **PhD WORKSHOP #2**
TOPIC: Engaging in futures inquiry in design **Date & Time: 13th March 2020, 1400**
All materials are located on BOX: https://ahocloud.box.com/s/8ymb2oapz00jk9d6cdw1l65hni0238k

Any questions ahead of event, please contact: andrew.morrison@aho.no or Palak.Dudani@aho.no
Any matters **during** the event, do call Andrew: +47 93496212 (Whatsapp)

STAGE	ACTIVITY	SOURCE MATERIAL & ACTION
	ASSEMBLE All participants assemble	**ZOOM IN** Click this link at 13 March 2020 https://eu01web.zoom.us/j/731938009 Zoom for an outline Partipants then work online on their own (Zoom is used again only for wrap up)
1	**CONSENT** Your participation	**FILE** https://ahocloud.box.com/s/t2ct4ug2bzh/25df9hk6idthlswjb2fm Please read and digitally fill out the related consent form, and send it to Andrew
2	**VIEW** Your latest work	**YOUR TEXT** Your own most recent draft writing
3	**FOCUS** Summarise your writing	**OWN NOTES** Write 200 word summary of that recent writing
4	**STUDY** The REFLEXICON Game	**REFLEXICON (print version)** Open this document and look at it https://ahocloud.box.com/s/z7khq3vjyg2cealf5x6n277zmtk09pmp Listen to the explainer at link https://ahocloud.box.com/s/oiqjfha825pngty3ugy9vlumy69lqind **REFLEXICON (online)** Open the online version https://ahocloud.box.com/s/bz9w5ungurl8tme0uyhk1oipjqz5xsty Choose which of these version you'd like to use for the next Stage
5	**PLAY** The REFLEXICON Game	**GAME (PRINT/ONLINE)** Choose a mode Relate to your research Focus on terms
6	**RELATE** To own research	**THINKING** Reconsider terms, definitions and concepts on futures in your publication work
7	**REFLECT** On the Game design and engagement	**REFLEXICON FORM** Fill out and upload the online form https://docs.google.com/forms/d/e/1FAIpQLSe831UHRGthjKVXYlvc61kfdwuS5qJgm-ozSmRopZlVL0UPQ/viewform
8	**DISCUSS** Share experiences and ideas	**ZOOM FORUM** Zoom group meeting Click this link https://eu01web.zoom.us/j/731938009

◄ Figure 3. A screenshot of the Google document used to structure and facilitate the project's first online and completely synchronous workshop.

Engaging in Futures Enquiry in Design, PhD Workshop #2. REFLEXICON.

AHO, 13 March 2020. Teachers and facilitators: Andrew Morrison & Palak Dudani

The REFLEXICON workshop was planned as a digital synchronous workshop and conducted over zoom. In order to facilitate the workshop remotely, supporting material such as the digital interactive tool and a video tutorial were designed. The participants also had the option to share their feedback using the feedback form. The workshop was designed with PhD students in mind. The aim of the workshop was to introduce the students to a design game as a way to question how futures design words work.

The game play also encourages students to connect critical reflection and reflexive review as part of their design research practice.

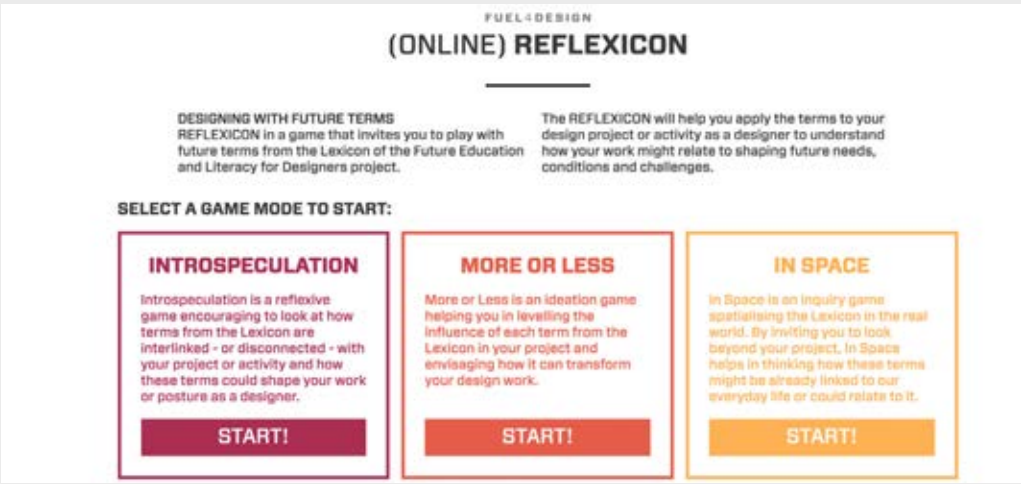
In this post we share how we participants played the REFLEXICON game and their reflections on how it supported them in their design research work.

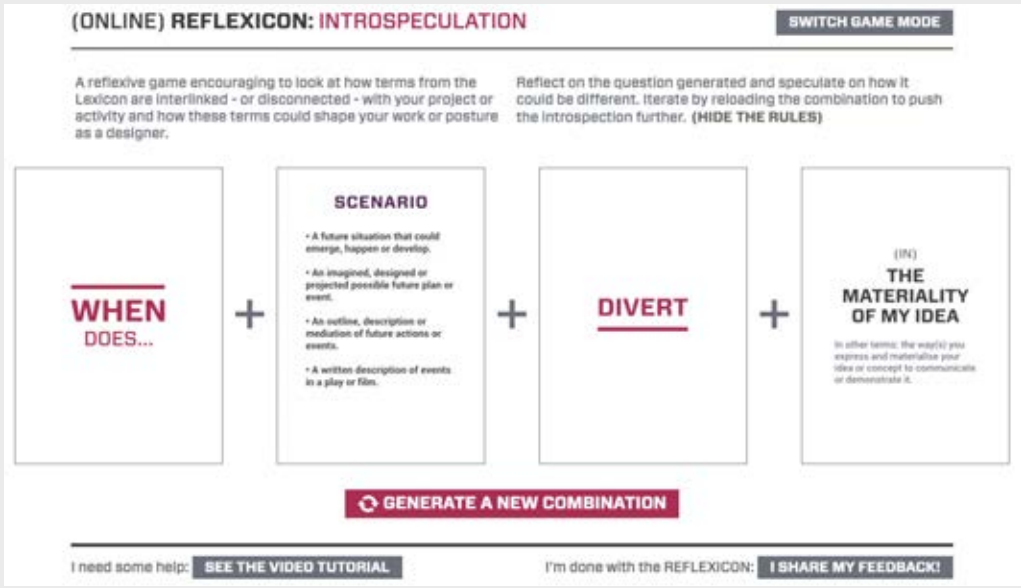
Within the workshop, the participants are encouraged to have a short write up of their project before they can begin playing the REFLEXICON. The participants start with the video tutorial to understand the rules and instructions. The RELFEXICON has three game modes and participants can attempt them in any order..

Game Mode #1: Introspeculation

The Introspeculation game mode encourages designers to look at how terms from the Lexicon are interlinked – or disconnected – with their project or activity, and how these terms could shape their work or posture as a designer. It prompts players to reflect on the question generated and speculate on how it could be different. Players can iterate by reloading the combination to push the introspection further.

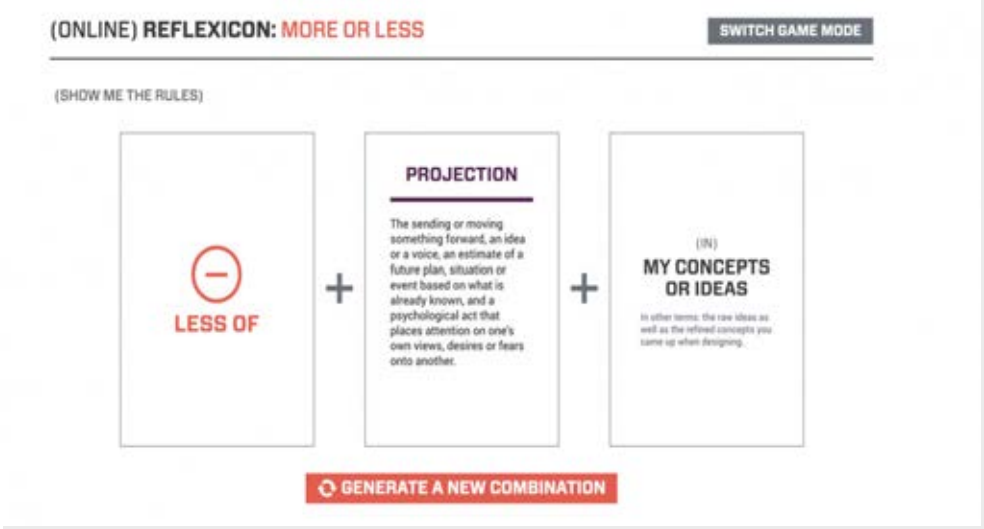
One of the PhD student participants found the combinatorial aspect of the terms interesting saying that 'it sharpened my critique of different words'. Another mentioned that they found this game mode 'highly relevant' for their work, one of them expressing that '[it helped me] create perspectives on my article/ work'.

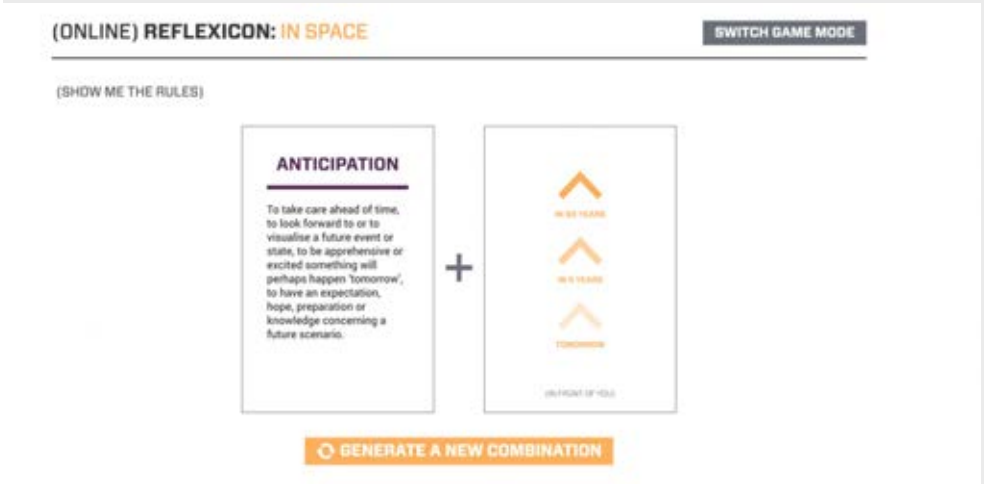




▲ Figure 4: Screenshot of the REFLEXICON digital interactive tool (top).

▲ Figure 5: Screenshot of the game mode Introspeculation of REFLEXICON digital interactive tool (bottom).





Game Mode #2: More or Less

More or Less is an ideation game mode, helping designers in levelling the influence of each term from the Lexicon in their project and envisaging how it can transform their design work.

It prompts players to imagine what more or less of this term might change for their practice or their work.

While playing this game mode, PhD students reflected: "when we say more 'speculative' does that mean being less critical?" They felt that it was "helpful for me to think about my research in a different way and I can see different things I cannot see before the workshop.

Game Mode #3: In Space

The In Space game mode is an inquiry game spatialising the LEXICON in the real world. By inviting designers to look beyond their project, In Space helps in thinking how these terms might be already linked to our everyday life or could relate to it. The instructions say:

Look at what the arrow card is pointing to. Consider the whole environment or a specific element being pointed. Reflect on how the term could be linked to what the arrow is pointing to and might evolve tomorrow, in time.

▲ Figure 6: Screenshot of the game mode 'More or Less' of REFLEXICON digital interactive tool (top).

▲ Figure 7: Screenshot of the game mode 'in Space of REFLEXICON digital interactive tool (bottom).

► Figure 8: A PhD student participant sharing their notes on how they used the physical card game in a digital remote workshop setting. (Photo: Yue Zou).

During feedback discussions, one of the PhD student participants felt that 'space game [mode] is very helpful for creating scenarios' while another said that 'it builds a connection with reality'. A PhD student who's looking at the role culture within service design reflected how 'the mode helped me to think more about the change and development of a specific term, which can push me to imagine the relationship between a term's present and the future.'

Discussion and reflections

The PhD participants described playing the REFLEXICON as 'doodling with words, like a creative method for understanding and issue-making', and as a 'a way to expand my thought and encourage me to think about the details of my research'.

What words do the most work for us? When we define words for ourselves, they're tied to the core concepts we're going to use. At that time, we have to strike a balance such that the words are general enough to be understood but specific enough for our work (within the discipline we are). The PhD students reflected on the use of words, and how 'words hold different meanings in different disciplines. When working with words, there are questions one has to ask oneself.

The game is set up in a good way to support that.' Another mentioned the role of words in supporting 'imagination' and 'if you have a word for it, you can think about it'. Going deeper in the use of specific words, one of the participants chose 'inter-factual' and said 'it sharpened my argument on what role it plays in the process as designer.'

Another participant chose 'reflexivity' saying how it helps them question the role of 'reflexivity (and how it) informs the process of my research, it's significance in my research. What am I doing differently from others and why is it important? We used the terms 'less' and 'more', it's a dualistic idea but in my project I have multiple views.'

Prof Amanda Steggell, a choreographer from Oslo National Academy of the Arts attended the REFLEXICON workshop and noted:

> ... the instructions of the game appear to be more fluid. For example, the terms, as described, challenge participants/users to find/discover/discuss other descriptions of the terms, more situated in their specific projects, more than less, suited and situated in the world. And not in the least, the lexicon and game can be.

FEATURE 8

DESIGN FUTURES SCOUTING: Cards in the Atlas of Weak Signals

BY Oscar Tomico & Mariana Quintero

Introduction

Design cards formed part of our design educational work in developing and testing applications of the Atlas of Weak Signals. Here, weak signals refer to early indicators of change that might have the potential to trigger major events in the future, which turn them into a key concept to include in the process of framing future-oriented design interventions. Overall, 'The Atlas is a tool for combatting future challenges by actively creating opportunities for design interventions to dissolve the troubling problems of our times'. (Diez et al., 2020: 1).

Context

The Atlas of Weak Signals is a toolkit that was developed by Fab Lab Barcelona in the framework of its Masters in Design for Emergent Futures programme, but that has found applications in a wide range of spaces and users. It consists of four decks of cards and a Design Space canvas. The main deck consists of 25 weak signals divided into 5 thematic groups representing areas of interest, concepts and realities that are offering major space for transformation in all areas of society ranging from technology, media, culture, production and consumption, to identity, politics and climate emergencies. These were curated by renowned cultural analyst and researcher Jose Luis de Vicente in collaboration with Fab Lab Barcelona as an effort to offer a navigation tool for design researchers and students looking for intervention opportunities in an oftentimes overwhelming landscape of huge systemic shift. (Diez et al., 2020: 1).

Design and making

In the beginning, the Atlas was presented in a classical seminar format in which master students would get an overview of the 25 selected signals, their realities, key statistics, reference projects and opportunities, but later it was noted that a methodological shift was needed in order for participants to be able to bridge and

▲ ► Figures 1-4: Fab Lab Barcelona activities at Workshop at Space10, Copenhagen, 26.02.2020. (Above and following page; Image credit: Fab Lab Barcelona).

SEE:

https://fablabbcn.org/blog/emergent-ideas/atlas-of-weak-signals ↗

https://fablabbcn.org/blog/emergent-ideas/designing-emergent-futures ↗

Fab Lab Barcelona visited SPACE10 in Copenhagen to present the Atlas of the Weak Signals practice, hosting a series of inspiring talks on emergent futures and a workshop on the Weak Signals card game which was developed by the team at Fab Lab Barcelona. This was a half-day program in which 60 participants – employees from SPACE10 amongst other attendees -were introduced to the Atlas of Weak Signals.

apply this reference system into their practice as design researchers. That is when the cards were created. To the main 25 weak signals system, other four decks of cards were added, so that a combinatorial strategy could offer personalisation and triangulation opportunities in between the signals themselves but also connecting them to infrastructure, design challenges and further triggers to expand on the topics presented. A Design Space was included as a canvas with guided instructions, so that the methodology could be activated autonomously or with the aid of facilitators that needn't be experts on the theoretical aspects of the topics. In the end, the configuration of the toolkit turned out as follows:

Deck 1: 25 Weak Signals of Emergent Futures organised in 5 groups: Design for the Anthropocene, Life After AI- The End of Work, Life in the Times of Surveillance Capitalism, After the Nation State and Kill the Heteropatriarchy

Deck 2: Areas of Opportunities - Strategic areas of research that have been identified by Fab Lab Barcelona as major areas of innovation (Diez et al., 2020: 1)

Deck 3: Random Triggers - A collection of sub-topics and further weak signals that aid with the unpacking of the cards in Deck 1. These offer keywords and vocabulary for further exploration

Deck 4: Challenges - Five cards that describe specific challenges for innovation: Institution, Service, Professional Role, Policy, and Product.

Use and applicability

The cards were created as a support system to bring the complex intellectual output of the Atlas seminar to the Design Studio, but their use turned out to be so intuitive and flexible that soon we noted that they could be taken out of the limits of the educational programme to be offered as an ideation or research tool for independent practitioners, organisations and companies interested in future-scenario making and forecasting.

As an in-depth resource for design education practice, we were able to test inside the framework of the Fuel4Design programme, how the Atlas toolkit could provide structure within our Design Studio methodology to bridge the gap between ideation and envisioning, to actually framing and deploying design interventions in context that transformed communities and local socio-technical systems.

We were able to extend the card system with multi-scalar mapping canvases and activations that launched the exploration and deployment of how to bring those global weak signals into actual contexts of transformation. The cards proved to be an organisational reference system where the students could visualise their research, find keywords and new vocabulary for latent interests they had, and share with tutors and possible partners as a visual communication tool.

Students come to the Masters in Design for Emergent Futures programme from various backgrounds ranging from political science to ecology, with the intention to contribute positively to our current systemic crisis predicament via design. The challenge on how to start such a process when a student or a participant hasn't designed for that particular area or hasn't even participated in a design process before is where the Atlas comes in. It helps situate students, it offers a starter design space to gain confidence and direction on where to begin the process.

Finding Weak Signals to Design Emergent Futures. 26.02.2020

This alternative educational experience provided an opportunity to question, disrupt and challenge methods of practice, offering a chance to learn alternative perspectives on contemporary issues.

5.
Design, futures and mediational means

Introduction

BY Andrew Morrison

FUEL4DESIGN has taken up a diversity of platforms, tools, media and modes of mediating its developmental and exploratory design pedagogies. In design schools, students use a multitude of software and convey their projects through multimodal mixes and formats, with materials increasingly being recombined and articulation of designs percolating into and influenced by adjacent design domains as well as through novel links between and across them. Design educators support students to work with designing - whether in briefs or self-directed semesters or master projects or PhD chapters or journal articles – in which their physical and digital literacies are exercised in dynamic relation to one another and configured to meet their points of focus, need and mediation.

In all of these endeavours, designs are mediated, that is they are shaped individually and collaboratively and articulated via paper and screens, in 3d physical and digital forms, and communicated via projections in place or by ways of screen shared digital platforms. Design futures literacies are deeply implicated in how commercial tools and platforms are employed and how we consider the affordances and preferences, along with the practices they instil in our contexts of use and circulation. In this book we have included a range of representation forms and mediated examples of how tools and platforms, modes of communication and different media have been taken up in the life of the project and a pandemic that forced us to make a digital pivot and to reassess our ways of working and learning together. In this section, we shift focus to two cases, different in nature and orientation, developed in the project where mediational aspects of learning resources and activities are addressed.

These first is an example of reflection on work developed and completed in the module on DESIGN FUTURES SCOUTING. The second is a prompt, a type of meta projection and future facing perspective on work developed in the DESIGN FUTURES LEXICON. These two cases are included to take up matters concerning the mediation of design futures and different ways they may be materialised and included to diverse pedagogical ends in our exploratory design futures pedagogies.

The first case concerns distributed collaborative making and is co-written by a team of teacher-researchers from ELISAVA with the work taken up emerging from their specific master's course.

The second case is authored by our project's web and digital designer who participated in part in the development of the LEXICON and offers a speculative take on its possible future. This case thus looks to how we might reconsider work offered and undertaken and provides an optional future that toys with potential and remains at a level of suggestion not direction.

Distributed, collaborative making

BY *Jana Tothill, Roger Guilemany, Oscar Tomico, Guim Espelt Estopà and Mariana Quintero*

Introduction

Considering the current climate emergency and the untenability of our economic system (Cielemcka, 2019), we need tools to address and comprehend the situated and complex singularity of our contemporary existence, creating transversal alliances between practices (Braidotti, 2019). Using a posthuman or non-humanist approach to design, we attempt to be much more expansive and pluralistic in how we understand design. Allowing other actors to cohabit in the centre stage provides a more equitable gaze that enables us to incorporate concepts of relationality, situated knowledge, multiplicity, and intentionality into our design practice (De Paola, 2013). Therefore, de-centring the human opens up new symbiotic relationships with non-humans (Tsing, 2021) and collaborative networks (Haraway, 2016). It provides tools for creating and sustaining healthy assemblages in the design practice (Braidotti,2019) and actualising collective imaginings (Gatens, 2002).

An example in a box, beyond 'boxing'

Nomadic Box [Figure 9] was a year-long research project that sought to understand the life cycles of things from a different perspective, emphasising their agency, highlighting their relevance and impact on the planet, and exploring how this paradigm can create reflections on current designers' practices and processes. This project was inspired by the mail art movement and the avant-garde neo-dada Fluxus movement of the 1950s and 1960s (Harren, 2016). Following the concept of 'fluxus boxes', Tothill and Guilemany used them as containers to collect representational gathered things (Devendorf et al., 2019).

The way *Nomadic Box* worked was: a container was prepared with a set of instructions and sent it to a specific designer through the post; this designer then had 24 hours to fulfil the exercise and send it to someone else. Therefore, the assemblages of intervened objects and reflections were constructed gradually through the extensive and personal networks of the receivers. Eventually, these containers were sent back to the original return address specified on the box with an unexpected collection of things.

The final, 'refined' (and most relevant) set of instructions asked participants to reflect on the death of one of their projects. They were requested to physicalise it, put it in the box and send a written or audio reflection to the number on the box corroborating/

explaining their actions. Of course, to get to this distilled (and to the point) version of the exercise, Tothill and Guilemany undertook several trials. A total of 4 boxes were launched sequentially; we waited to get the feedback of each before tackling the next to be able to incorporate updates and improvements to the exercise.

◂ **Figure 9**
A *Nomadic Box* with its set of instructions and different objects provided by the participants. Nomadic Box is a project by Jana Tothill and Roger Guilemany (Master's in Design for Emergent Futures 2020-21, IAAC-Elisava). More on Nomadic Box, see: **Link ↗**.

The last two boxes occurred in parallel and contained identical instructions, to avoid confusion we will address them as a single cluster. These last two boxes had six participants, six dead objects and six audio and written reflections. In these boxes, we found: 'broken glass in a glass jar', 'paper tile', 'broken vase', 'wind-up clock', 'communion book', and 'bumblebee'. The participants of this box consisted of architects, product and industrial designers and a design historian, two females and three males between the ages of 30 and 50.

The method of gathering the collective imaginings remained the same throughout all the boxes. The final assemblages depended on the previous participant's interpretation of the exercise. Therefore, we had no way of knowing who would participate in each of

the boxes; we only had the power to choose the first participant. It is significant to say that there was no explicit mention of any posthumanist concepts at this stage.

Reflections

With *Nomadic Box*, Tothill and Guilemany asked designers to describe the death of a thing they had previously created during their practice in order to trigger a reflection on the responsibility of putting yet another thing into the world (Bennet 2010). They wanted to extend their understanding that their commitment did not end when their creation left their creative sphere. As creators, they had to understand the implications a designed thing would inscribe during its lifetime and at the end of its life.

Nomadic Box enacted a new relationship with objects. The exercise made practitioners experience another agency from their designed objects, foreseeing their biography (Wakkary, 2021) and reflecting on their responsibility as designers. Tothill and Guilemany closed the project by creating a dialogue among participants, bringing together their community of practice to contrast, share, and discuss the multiplicity of reflections they gathered on their futures scouting process, displaying an alternative present to embed post-human theory into the design practice. Their boxes became a tool that would give agency to others and bring them into the design process.

Rendering design futures by other means

BY Andrew Morrison 6 Bastien Kerspern

Collaborative critical pratices

In working on language, web design, futures and the LEXICON part of our collaboration involved our experience and expertise between project and work package leader and a design bureau specialist and project design member. We collaborated as a digital media scholar, applied linguist/designer-researcher with experience in narrative and interaction design and design research, and a games and futures process designer who is a design fiction specialist and design educator.

This was one of a range of designer-educator-research collaborations in FUEL4DESIGN. It built on previous shared design and research work, principally in the adjacent and overlapping artistic research project Amphibious Trilogies into extended choreography via investigating and instigating situated studies of relation between movement, design, media, ecology and socio-cultural practices. Our joint motivation in looking beyond the first tier of resources in the LEXICON was to offer a number of examples of ways it might be taken further. As part of the main interface we included a section entitled 'Renders'. This became a two part (cases and free renders) more openly experimental and gaming inflected, speculative and personally 'wild' focus on terms, contexts and articulations in shaping shared vocabularies of design futures literacies [Figure 10]. It was infused with practice-based experience and exchange and collaboration, now spanning eight years, on Anticipation Studies, interaction design, speculative design futures and design fiction (e.g. Morrison, 2014 - Kerspern, 2018 - Morrison et al., 2021).

◂ Figure 10
Three free renders suggesting ways the DESIGN FUTURES LEXICON might be taken up in different ways. (Credit. IO1 FUEL4DESIGN).

Offering counterweights

These elements of the LEXICON were posed as wider offerings to ways other materials in the project might also be taken up, perhaps re-situated, re-oriented and reinvigorated, more abductively than directively. A core motivation was to suggest ways of motivating further use in which play and oddity, unexpectedness and surprise might offer some counterweight to otherwise at times formal, even dry renditions of design futures vocabularies and literacies.

Central to our thinking was to pursue the interplay between engagement, roles and 'stance'. The Free Render shown here, entitled DESIGNING THE FUTURES OF THE DESIGN FUTURES LEXICON, thus includes two anticipatory scenarios and a sketched toolkit for working with them. In our view, the environment remains 'undesigned'. Marenko (2018: 50) argues that the convention view of design as to do with intentional planning and legible blueprints:

> *... is challenged by insisting on the contradiction and the resistance that the problematising complicity between vagueness and contingency brings to design. Vagueness and contingency are here taken as two complementary disruptive forces impinging upon the design process. Vagueness, as the continuity of immanence out of which all things are created through a process of morphogenesis and emergence. Contingency, as its aleatory by-product, the unforeseen terra incognita ensuring that no drive to resemblance, no retrofitting impulse can sneak in and taint the process. As such, vagueness and contingency constitute the undesigned at the core of design.*

These various examples of tools, mean and mediation also benefit from being read together. However, we need to also consider relations between the physical and virtual in shaping design futures [Figure 11]. This has been championed in the doctoral speculative design futures product-mediational 'rendering' practice work between creative and expository design futures literacies and multomodal discourses by of one of the PhDs at AHO, Jomy Joseph, as shown across these essays (Joseph, 2023).
To further conceptually expand on imaginary and pragmatically situated relational anticipatory design making and analysis, next we turn to a section on meta-design and futures in design learning.

Figure 11 ▶ From Joseph, J. (2022). *The 0pen Journal of Refuturing*. Centenary Special Issue, Spring 2131. p. 8. (0pen Design Society: 0slo). (Joseph, 2023). Both texts are The journal and related PhD thesis are here: Link ↗. (Image credit: Jomy Joseph).

6. Elaborating on Meta-design, tools and learning futures

Meta-design as designing design processes

BY Manuela Celi & Chiara Colombi

Framings

Focusing on the mediating role Design has among disciplines (Celashi, 2008a), we can consider the object of the design practice not only the result of the design action, be it a product, a service or an experience, but also the design process itself. We refer to the design of the design process (Celashi, 2008b) as meta-design (Deserti, 2003). The Greek suffix 'meta' means 'through, after, behind, between' and over time it has acquired the meaning of 'beyond, further than'. In the specific context of our discipline, the concept of meta-design refers to the overcoming of the centrality of the design synthesis that leads to a specific result in the designer's actions.

This benefits the understanding of the possible objectives of the design action; of the research, activation and analysis of the information and resources necessary to implement the project; of the understanding of the contextual conditions that could influence preliminary decisions and the following design process; of the formulation of possible implementation trajectories that will guide the 'real' design practice.

Therefore, Meta-design has as its objective not the design output itself but rather the organisation and management of the propaedeutic and preparatory activities for the design practice. The nature of dependence on the context, from which the variability of the Meta-design process derives, rejects the Simonian ideal of the existence of a principle of rationality that allows to correctly represent the objective and arriving at the best solution, considering the design assumptions and the project request (Simon, 1969).

Meta-design is configured rather as a reflexive praxis (Schön, 1983; Schön, 1987). Schön (1987: 13) states that there is 'an art of framing the problem, an art of implementation and an art of improvisation, all necessary to mediate the use of applied sciences and techniques in the practice'.

Learning through the practice of the project and through reflection on this practice defines the phenomenological nature of the meta-design in its adaptation to the context and in the continuous adjustment of points of view and evaluations.

Further, if the design of the design process is influenced by the premises of the analysis, the choices made by the designer act on the context itself, in the process of acquiring and verifying information and modelling a plausible hypothesis that can then be verified through the subsequent design action. Those choices construct the context to the extent of the hypothesis. They represent it - in a philosophical sense of the term on the theme of representation, from Aristotle's cognitive process of abstraction, to the representative activity of Kant's consciousness, up to Sartre's creative powers of imagination - through the interpretative ability of the designer. They explain the motivations that move the designer and their actions through the transfer and sharing of the elaborated contents and the knowledge acquired about the context itself.

Meta-design is therefore a cognitive process that allows us to investigate the context within which the project refers or will refer. It encompasses an output is the proposal of multiple points of view, interpretations, visions from which the project can be founded and take their steps towards a coherent solution to the chosen premises. The Meta-design approach denies the existence of 'rules' and a univocal method for the design practice. As Archer (1979 writes, '... also the design has things to learn, ways to know them, and ways to "make discoveries" on them (...)'.

Meta-design is the method of 'discovery', unveiling the very project that is designed in accordance with the contextual conditions in which it takes shape. In this framework, a multilayered set of tools facilitates this reframing process, exploring the openness of the design practice and its ability to configure design futures. Therefore, future design pedagogies require a situated use of methods and tools, whose appropriateness is defined from time to time. Next we turn to two points of focus: Activism, action, transformation; and Extending tools in re-situated use.

Meta-design and extending tools in Re-situated futural use

In recent years Meta-design has gained traction, with focus emerging, for example, in Human Computer Interaction (Fischer & Scharff, 2000) and through work done in our own design education and research setting. Fisher & Giccardi (2006) focus on Meta-design as an emerging conceptual and collaborative framework for the future of end-user development where co-adaptive, co-design between systems and users is central to shaping dynamic relational settings of acting and knowing, including design. In our own work (Celi & Colombi, 2020), we focused on the uses and potential motivators of design futures knowledge through attention to trends as future prompts in emerging practice of anticipatory designing.

Throughout the increasing complexity of design systems and methodologies, there has been a development of a first phase that initiates this process; Meta-design, the 'project of the project' provides an abstract overview that facilitates the organisation of the given project (Celi, 2012). Coined by Van Onck (1965), Meta-design has been defined over the years as an analytical programme composed of strategic activities, aimed at guiding and constructing the project, defining its framework and meanings by codifying and translating the signals picked up from the surrounding cultural context (Celaschi & Deserti, 2007; Celi, 2012).

FEATURE 9

Engaging with impact

BY Manuela Celi

One of the interesting growths of the FUTURES DESIGN TOOLKIT was its meta-design and metacognitive application in a EU parallel research. The EU-project called SMOTIES - a four year co-funded project by the Creative Europe Program (Smoties, 2020-2024. **Link ↗**) - aims at working creatively with small and remote places. SMOTIES project belongs to the Human Cities network involving, since 2006, design, art and architecture universities, centres and consultancies. Spanning all Europe, the network acts as a platform of interdisciplinary exchange, examining the liveability of public spaces by using participatory Design as an approach to supply systems of process and innovation.

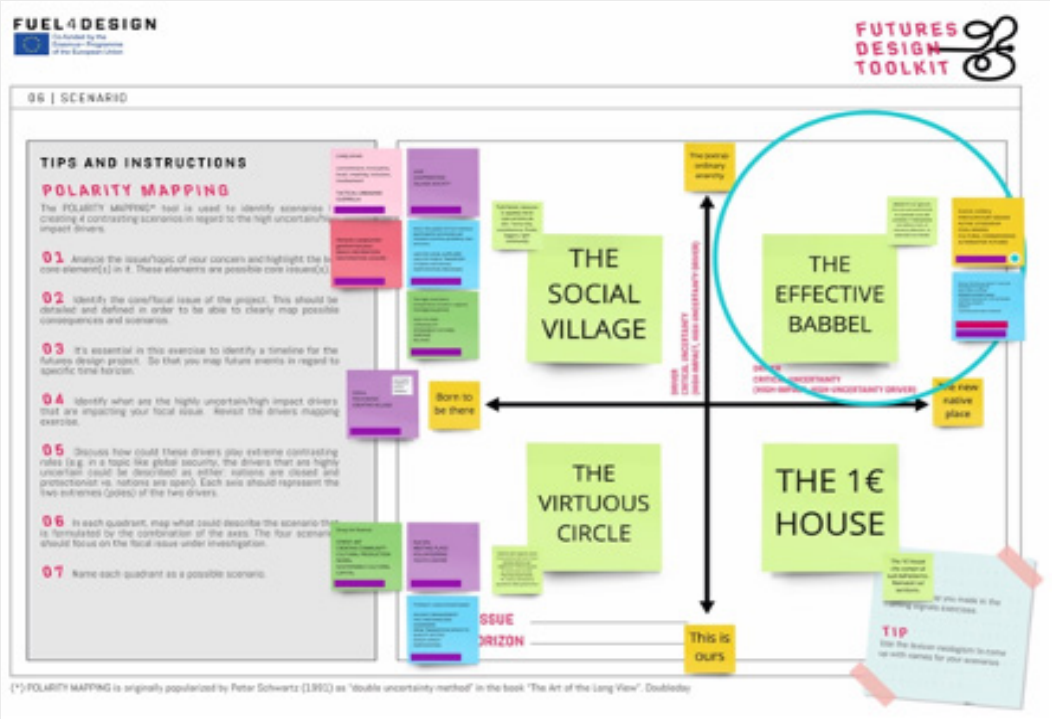
The SMOTIES POLIMI team used the FUTURES DESIGN TOOLKIT was a meta device with two aims:

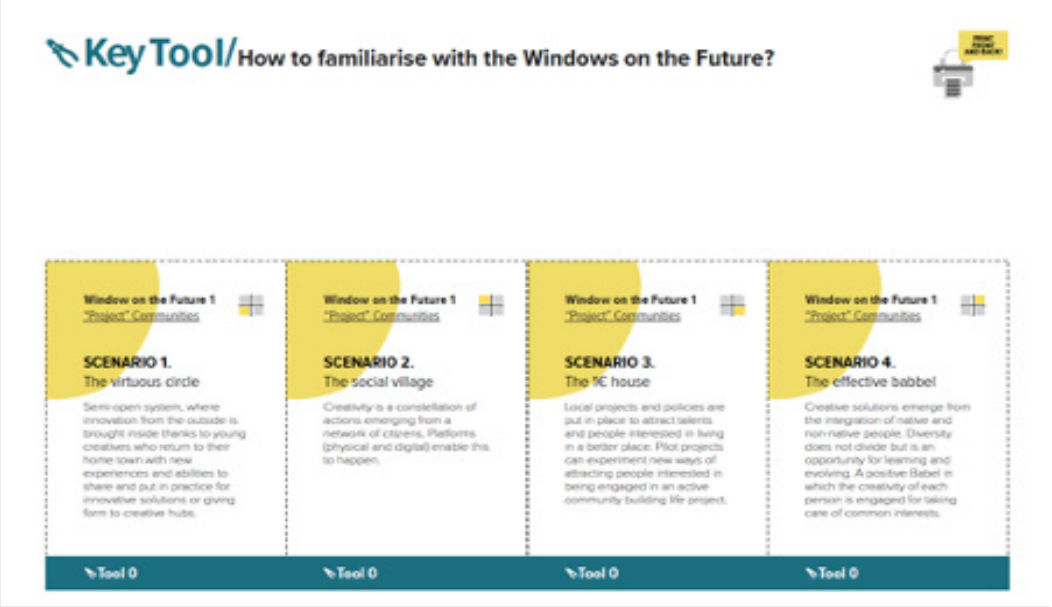
- generating intermediate scenarios to start the dialogue within the involved communities and the partner institutions
- developing the SMOTIES Futures Toolbox as one of the outputs of the SMOTIES project.

This related toolkit has been developed to guide the international network of partners of the European project to analyse and understand the challenges of small and remote places and guide local partner institutions in identifying possible futures.

Its aim is to enable creative teams to envision near and far futures for specific contexts, positioning them within a framework of European challenges and defining and assessing specific impact objectives to lead concrete creative actions in the territory.

This side experience revealed a different and unexpected potential of the FUTURES DESIGN TOOLKIT as meta-tool; it functions as a generative engine able to support a research group creating tools in a recursive reflective practice. This novel learning and teaching materials for emerging interdisciplinary and anticipatory practices seem to have the chance to influence and cross-pollinate other disciplines.





▲ Figure 1: Polarity Mapping, Scenario Canvas, 'Futures Design Toolkit' (FUEL4Design, 2021), Applied by SMOTIES PoliMi Team to develop the SMOTIES Futures ToolBox (above).

▲ Figure 2: SMOTIE final scenarios developed though the 'Futures Design Toolkit' (below).

Meta-design proves to be an essential component of futures disciplines and futures literacy, since it considers a previous stage of design when the project's totality is contemplated and directed towards the future. If we understand design 'as the momentary coalescence of future possibilities materialised today' (Marenko & Brassett, 2015: 6), designers have the possibility of shaping the future by applying a Meta-design approach, by steering their research towards futures thinking.

This master plan consists in the design and definition of the parameters from which the designer will choose the most adequate combination to carry out a project, enabling the codification of 'three main aims of the design practice as problem-finding, problem-setting, and problem-solving.' (Celi & Colombi, 2020:3). The focus is set on problem-setting, i.e. the definition of the challenge to be addressed in the following stages of the project, it is crucial since it provides designers the clarity on how to proceed. In particular when dealing with a longer time span, Meta-design allows to build a framework where multiple futures and possible direction can be envisioned.

Mirroring this praxis in the educational context, Meta-design turns to the triggering of meta-cognitive abilities; it aims at providing students with a work method and could also be described as learning to learn. Design courses that follow a Meta-design approach enable students to experience and reflect upon all the phases of the design process, nurturing their methodology and developing those resilience abilities that enable adaptation to change and uncertainties. The purpose of Meta-design in education could be defined as the development of metacognitive skills and the ability to code and decode information from the context (Celi, 2012).

Working with futures tools in design futures literacies

Researching (into) futures is always a paradoxical matter as Bell (1996) calls it the paradox of futures studies. The paradox comes from the fact that the futures do not exist, so futures itself cannot be a matter of research (Dator, 2018). Adding design to this equation makes it even more difficult to elaborate. However, for the same reason, Futures studies scholars have developed several tools to help in researching into futures where the goal is not about predicting the future but rather to explore different alternatives and possible paths.

Tools for futures research (that were gathered and analysed during the preparation of the FUTURES DESIGN TOOLKIT of the Intellectual Output 4 are tools that support futures researchers in interrogating futures issues taking the present as a site for exploration and problematisation. These tools vary widely from participatory methods to tools that support individual researchers in digging deeper about particular futures issues.

A good example for the tools in futures studies is the CLA (Causal Layered Analysis) developed by Inayatullah (2004), which helps researchers in dissecting emerging issues while avoiding the superficial causes of an issue attempting to uncover the deep roots that created the issue itself. This comes along with other sets of tools such as PESTEL analysis (The Futures Toolkit by UK Government, 2017), CIPHER (FTI, 2020) and VERGE

(Strategic Foresight Toolkit, 2019) which are tools that help in scanning the present issues trying to identify the patterns shaping the future. Another example is the set of tools that help researchers in imagining alternative visions of the futures which are the tools concerned with Scenarios making, developing alternative future paths such as Branching (Beery, et al., 1992) and Futures Wheel (Glenn, 1972) as well as the defining drivers for the futures such as the Futures Forces (FTI, 2019). All of these tools are native in futures research, yet they can greatly help designers in informing their design processes and to better develop more futures-aware products and services.

Upframing Meta-design

BY Manuela Celi & Chiara Colombi

Views from the project

Appling a Meta-design approach to anticipatory literacy and future making by designing requires up-framing intended as the consideration of the overall system of which the activity is a part. This up-framing allows continuous reconfiguration, moving away from a unique future direction toward a wider set of capacities required to identify and design new values and preventing a myopian view. A Meta-design approach applied in reflexive ways on our own research and tools has allowed a couple of experimentations in this sense, a meta-application of FUEL toolkit to a) an educators' course at Tecnológico de Monterrey (summer 2022) and to b) the EU-funded project Smoties to develop their own methodology.

The necessity to reinforce futures literacy in educational organisations, together with the updating of the contents were the main aims for the summer workshop for Tecnológico de Monterrey faculty in Mexico. This was part of a refresher course addressed to teachers from the Architecture, Arts and Design School as a disciplinary update. The course, titled Anticipation: from literacy to pedagogy, was part of a CADI program to add anticipation as a main component of their undergraduate curriculum, establishing the approach of advanced, prospective and speculative design as core educational guidelines. This proves itself relevant considering the transversality of the subject, where the need to create a common ground from which to articulate the different interests of the school should be met.

In this four-day course, 20 faculty members attended the online sessions facilitated by Politecnico di Milano which provided a series of lectures that allowed an in-depth introduction to the topic of Design Futures. This was followed by practical exercises, where each group addressed one specific issue or challenge of interest and implemented some of the tools which were previously selected (see 104). Starting with Horizon Scanning and Future Forces, and followed by Polarity Mapping and Scenario building, experiencing and using the tools first-hand enabled a further understanding of their potential. These exercises led to the introduction of the Educator's Guide where the different pedagogical outcomes were outlined and an understanding of how to apply them in class was detailed. The final session was dedicated to the creation of their own pedagogical path, with specific feedback on their application of the tools and devices, understanding how they would be effective for their class's objectives and aims.

Futures tools elaborated

A good example for how design futures tools can be applied is the SMOTIES Project (Creative works with small and remote places); [→ SEE **FEATURE 7**]. Our joint research team used the futures design toolkit to develop different future scenarios of enabling creativity in remote places.

The Scenarios tool (polarity mapping) was very useful and beneficial for the project, since the research team could easily explain the different alternative scenarios for all the partner institutions. They could help in catalysing the communication of ideas by showing how things could be in different ways. Design and futures are intrinsically connected fields (Candy & Potter, 2019). Both are looking at the futures trying to understand what shapes it and what realities are likely to be our (next) present. That is why it was a natural fit to re-design the tools coming from futures studies to fit to the FUTURES DESIGN TOOLKIT.

Futures tools were used to design the futures design toolkit by bringing disciplinary knowledge from Futures Studies to design and focusing on how the capabilities of imagining alternative realities can be applied to design. The tools were adapted and redesigned to fit to design needs and to bring about design aspects to futures. They were meant to explore the merge between the two fields and to highlight how they could be fused together.

Conclusions

BY Manuela Celi, Chiara Colombi & Andrew Morrison

> *As designers, we are at the same time part of the problem, that can also be the solution. We are the ones spreading products all over the world without taking into account the impact that they should have and mostly only introducing new stuff. But the matter is that there is also beauty that is invented in those products from many different levels and layers. Futures education in general is connected with a value layer. (Manuela Celi, PoliMI, in an interview with Vlad Lyachov).*

Futures design tools and articulations

In this essay, we have focused on three main aspects of reflecting on and motivating for anticipatory design pedagogies. Our interest in tools highlights a need for design educators and students to be far more critical about the disciplinary and positional logics, material and cultural affordances and value inscriptions embodied and communicated by and with design tools [Figure 12].

In terms of means we looked to metaphor to address matters of how poetic, cultural coding and significations may be effected and affected in our educational programmes and interventions in reaching for more equitable, representative and far-reaching civic and societal futures. Design is engaged in needed, difficult and changing activities of its own decolonisation.

Figure 12 ►
Part of the ELISAVA Master's in Design for Emergent Futures (ELISAVA, IAAC), using the Atlas of Weak Signals physical kit during the second week of the programme. (DESIGN FUTURES SCOUTING, 103). (Image credit: Fab Lab Barcelona).

As Nold (2022) reminds us, as design educators and researches, are now entangled in a politics of meta design in which we are engaged in design re-designing itself. Such a meta design needs to be careful and creative in the ways it works further with design tools, methods and mediations as design schools engage actively in supporting the pragmatics and critical-creative methods of our own making together with ways we access and incorporate the expertise of others outside design.

Futures design with futures design literacies

Although the relationship between Design and Futures have become more intimate over the past decade (Candy & Dunagan, 2017), Futures Design is still in its infancy. Relevant tools and methods need huge efforts to be further developed, explored, tested and validated within design communities to achieve a more coherent output. They have shown to be very relevant in altering the paradigm-shifting students' mindsets (Celi & Harb, 2021). Yet, they need to be formalised in terms of what sort of knowledge they generate and how this knowledge could be utilised within the course of practice and/or education.How such generated knowledge informs the transformative process is the fundamental question we should all ask.

Our role as design researchers and educators is to give a space for futures-aware design process to be a core part in shaping design courses. Futures literacies for design has become an indispensable capability designers need in order to face uncertainty, ambiguity, and the overwhelming environmental challenges with more design-centred responsibility.

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CONTRIBUTORS

Manuela Celi, Associate professor, has been the principal investigator of FUEL4DESIGN for the Design Department of Politecnico di Milano she teaches Metadesign and Design Futures at the Design School. Her most recent research activities focus on Design, Future Studies & Anticipation. In 2015 she was one of the initiators of the zero edition of the Anticipation Conference in Trento, co-chairing the Design and Anticipation special session. Her earlier research activity was focused on the different forms of knowledge related to design, their use and translation into skills within the learning systems to learn how to learn, and develop metacognitive skills. She has deepened her inquiry on design processes, particularly Advanced design processes. Following her more theoretical attitude, she has pursued transdisciplinary research investigating the relationship between design and the humanities and social sciences. In this mood also grew her interest in producing semi-finished or intermediate products of the design process with high cultural content such as trends and scenarios. With the aim of building a fruitful relationship between research and educational activities, she conveys innovative content in didactic contributions and launches experimental activities for students associated with basic research. She has published on several academic journals as *Futures*, *The Design Journal*, *DiiD*, *The Design Management Journ*al and *The Strategic Design Journal*. More information is available on her work website ↗.

Laura Clèries is Director of Elisava Research, Director of the Master's Degree in Design through New Materials and Professor at Elisava, Barcelona School of Design and Engineering. Laura has both creative and scientific backgrounds: she obtained her BA in Physical Chemistry and her PhD in Materials Science from the University of Barcelona and then pursued degree studies in Industrial Design. Laura has worked internationally as designer in main design companies (Zara Home) and design studios, and as researcher for main forecasting publications and think tanks (Pantone Colour Planner, WGSN). As materials innovation consultant, she has worked for Eurecat electronic textiles division, for the architects of Jean-Paul Gaultier's headquarters, and she has curated exhibitions related to materials innovation and forecasting (Materfad - textile area - and 'Materiality'). Her present research work focuses on futures research methodologies, as well as in materials innovation. In the FUEL4DESIGN project, she was Principal Investigator from Elisava.

Chiara Colombi has a PhD in Design, Associate Professor at Politecnico di Milano. She is Faculty Member of the School of Design, Politecnico di Milano, where she teaches in the Fashion Design Programs (B.Sc and M.Sc). She is the academic coordinator of FIT in Milan, Fashion Institute of Technology Campus Abroad program in partnership with Politecnico di Milano - Design dept. As co-founder and member of Fashion in Process Research Lab ↗ at the Design Department of POLIMI, Chiara's research interests concern knowledge creation processes, codification of meta-design research praxis, development of merchandising systems, trend research and scenario development in 'culture intensive' industries, with a specific attention on the fashion sector. More recently, she has been focusing on the evolution of the fashion-tech sector, with a particular interest in mapping and modelling opportunities of product, value chain and business models innovations offered by a systemic and sustainable integration of digital technology within fashion processes. She is the Editorial Director of the book series *Fashion in Process*, Mandragora Editrice, Florence; First Associate Editor of *Luxury Studies: The In Pursuit of Luxury Journal* published by Intellect Books; Vice-director of *Fashion Highlight Journal* published by Università degli Studi di Firenze; member of the Editorial Advisory Board of the *Research Journal of Textile and Apparel* (Emerald); member of the Editorial Advisory Board of *Fashion Practice* (Taylor & Francis).

Thea Dehlie is a project adviser and administrator in the Research Administration at the Oslo School of Architecture and Design (AHO). With a Bachelor of Arts (Study of Ideas and Culture) and previous work at the Research Council of Norway, Thea has supported the administrative working of the FUEL4DESIGN project as a whole and at AHO in particular where she is part of a dynamic team that facilitates research administration at institutional, national, European and international levels.

Palak Dudani is a systemic designer and researcher based in Oslo, Norway with undergraduate studies and work in design in India. In FUEL4DESIGN Palak worked on the design and development of the Design Futures Lexicon and related research on Design Futures Literacies, resource building for designers, educators, and researchers, and diverse modes of dissemination. With a soft systems view on complexity, and a relational and anticipatory approach to futures, her research explores how designers can work with radical systemic transitions in the context of climate crisis. Recent publications look at narrative and metaphors in analysing existing systemic complexities, contexts and conditions. Through participatory projects, events, and playful workshops using AI tools, she has explored how coding place-based narratives into culturally relevant metaphors could be used to imagine, articulate, and materialise radical alternative futures which are experiential, embodied and hyper-local. Palak has worked with humanitarian aid organisations, start-ups, and consultancies on projects in healthcare, transportation and education. She holds a Master's in Service & Systemic Design (Oslo School of Architecture and Design) and has been a recipient of international fellowships and design awards. An elected board member in the Systemic Design Association (2022 –), she is the Nordic Lead for building systemic design capacity within Design at Accenture Song. Please see Palak's personal website ↗.

Dr Guim Espelt Estopà is a designer, researcher, curator, teacher and learner. His background is in product design, with a special interest in the relations between design and fiction, design methodologies and socio-cultural aspects of design. He holds a PhD with a thesis about the representation of product design practice and discourse in cinema. He has worked in the areas of research and curatorship, creative projects, teaching and knowledge transfer, and organisation and management. He has collaborated with Museu del Disseny de Barcelona, Barça Foundation, ADI-FAD, Apparatu or Studio Suppanen. Since 2017 he has worked at Elisava, Barcelona School of Design and Engineering, where he acts as a teacher in methodological and theoretical subjects, as a Managing Editor for *Temes de Disseny* – the academic journal published by the school – and as a researcher for various European projects. In Fuel4Design, he acted as a Project Member from Elisava.

Roger Guilemany is a design researcher. He holds an MA in Design for Emergent Futures from Elisava/IAAC in Barcelona and a PgD in Management and Communication of an Applied Design Project with research from Elisava/ISEC Lisbon. In FUEL4DESIGN, he was an assistant researcher to the Principal Investigator from Elisava. As an independent researcher, he explores more-than-human interactions and collaborative situated production processes. He is a co-founder at aquí, an action-research design cooperative investigating and experimenting with participatory design, community engagement processes, and ecosocial transitions. He also collaborates with co-creation, self-construction, and self-governance projects, and as artistic productions. He has recently contributed to DRS 2022 ↗ and the Commons in Design ↗ conferences.

Pras Gunasekera is an educator and design researcher. After graduating from MA Industrial Design at Central Saint Martins (UAL), he co-founded Bidean, a more-than-profit enterprise in design and mental health and subsequently spent 18 months co-setting up a design studio at HMP Thameside to co-deliver Makeright ↗, a design thinking for prison industries course. His design practice has a focus on social innovation and utilising design processes to respond to social issues. He is currently employed as a senior lecturer on the BA Interaction Design course at CODE University of Applied Sciences Berlin ↗, where his teaching and learning focus on project-based learning, design research and ethics/ethical design practice. Pras is also part of the academic support team on the Product, Ceramic and Industrial Design programme at Central Saint Martins (UAL), where he is also a Research Associate with the Design Against Crime Research Lab ↗.

Ammer Harb is a lecturer in Product Design at the German University in Cairo and the Director of Design R&D at Studio PARADIGM. He is a designer and educator who holds a PhD in Design from the university of Politecnico di Milano and an MSc in Product Design from Brunel University London where he specialised in Critical Design Futures and Human-Centered Design. From 2019 to 2023, Ammer worked as a research fellow FUEL4DESIGN. In the project he placed particular emphasis on design tools and techniques for the future. Besides teaching Interior and Product Design, Ammer has worked on various design projects in Cairo, London, Dubai, and Milan. He has also facilitated design projects as a (Design Thinking) facilitator, such as the 'Social Innovation Platform' led by GIZ

(Deutsche Gesellschaft für Internationale Zusammenarbeit) in Germany and Egypt. Over his career, Ammer has developed three design toolkits, published 8 academic papers, and provided design solutions for over 100 projects.

Bastien Kerspern is a French designer specialised in design fiction and public innovation. He co-founded the studio Design Friction ↗ in 2014, pioneering in applied design fiction. With strong experience in designing participatory and playful experiences, he experiments with new modes of design in order to foster organisations' and communities' information, imagination and anticipation. He works with national administrations and local governments in France and in Europe, helping these organisations to address emerging or complex topics, such as smart cities, ageing in place, or biodiversity conservation. Interested in mundane frictions and uncanny narratives, his current works explore how socio-technological transformations and rhetoric of innovation might influence social models. Bastien also carries a discrete, but stubborn, passion for geopolitics. Aside from Design Friction, Bastien is a visiting lecturer on the topics of design fiction and games for futures (L'École de Design Nantes Atlantique, Umea Institute of Design, Oslo School of Architecture and Design).

Dr Silke Lange is a creative practitioner, educator, and researcher. Her role in the project was co-investigator, educational researcher and curriculum designer. Silke's research into critical art and design pedagogies is predominantly of a collaborative nature, working at the intersection of educational practice and knowledge exchange. This approach has been providing a productive platform for exploring alternative models of educational provisions, and collectively reimagining knowledge-making processes. Silke is an advocate for intercultural dialogue through collaborative and social practices in arts and design that set and support agendas for social change, reflected in her involvement in projects such as the UAx Platform ↗ and the European Academy of Participation ↗. Her research has been published widely, most recently in the co-authored chapter 'Using cross-disciplinary object-based learning to create collaborative learning environments' ↗ and the co-authored article in *Leonardo* titled 'Co-creation across spaces of uncertainty: Interdisciplinary research and collaborative learning' ↗. Silke is currently Associate Dean of Learning, Teaching and Enhancement and Reader in Hybrid Pedagogies at Central Saint Martins, University of the Arts London. More about Silke's research and projects can be found on her website ↗.

Vlad Lyachov is a Norwegian-based landscape architect who has worked on a number of design research projects at the Oslo School of Architecture and Design (AHO), including the NORDES 2017 Conference, Quality for Impact / AHO Research Review 2014-2017 and FUEL4DESIGN (IO6). Vlad received a Master's degree from the Moscow Aviation Institute (State University of Aerospace Technologies). Having started in the joint AHO-UiT programme in Landscape Architecture, Vlad graduated with a Master's in Landscape Architecture in 2017. He has also worked as an analyst in the research department at the consultancy Knight Frank, several landscape architectural offices in Oslo and is currently employed at COWI. Vlad's professional interests stretch from the past (history, languages, anthropology) through the present (architecture, landscape architecture, urbanism and design), to the future (futurism and sustainable development).

Dr Betti Marenko is a transdisciplinary theorist, academic and educator working across process philosophies, design theories and the critique of technicity. She is the author of numerous articles, book chapters and essays, most recently 'Hybrid Animism: The sensing surfaces of planetary omputation' ↗ (2022) and 'Stacking Complexities: Reframing uncertainty through hybrid literacies' ↗ (2021). She is regularly invited world-wide to speak on issues of design, futures and technology. She is co-editor of the volumes *Designing Smart Objects in Everyday Life. Intelligences, Agencies, Ecologies* (2021) and *Deleuze and Design* (2015). Her new monograph is *The Power of Maybes. Machines, Uncertainty and Design Futures* (forthcoming, Bloomsbury 2024. She is the founder and director of the Hybrid Futures Lab ↗, a transversal research initiative developing speculative-pragmatic interventions and world-building practices. Betti is currently Reader in Design and Techno-Digital Futures at Central Saint Martins, University of the Arts London and WRH Specially Appointed Professor at Tokyo Institute of Technology where she is co-founder of STADHI ↗ (Science & Technology + Art & Design Hybrid Innovation), a transdisciplinary Lab working across hybrid methodologies research and knowledge exchange with industry sectors.

Andrew Morrison works in the nexus of transdisciplinary design, education, creativity and research. He is Professor of Interdisciplinary Design, Institute of Design at the Oslo School of Architecture and Design (AHO), where he is the Director for the Centre for Design Research and former coordinator of the AHO PhD Programme. Earlier he led a transdiciplinary research network and design-technology-media-education research at the University of Oslo. With a background in language education, Applied Linguistics, Digital Media Studies, communication and 'development', Andrew has supported critical practice-based design doctoral inquiry across core design domains with focus on compositional, mediational and multimodal methodologies, informed by the humanites and social and computational sciences. His recent research is in Anticipatory Studies and design relatioal futures shaping and study, as well as scholarly communication. He publishes widely within and outside design; contributes to and reviews for a diversity of journals and conferences; and was the chair for the 2017 NORDES Conference on DESIGN + POWER ↗ and the 3rd International Conference on Anticipation ↗. This has built on earlier work in electronic literacies in media, design and education in southern Africa and Norway, extended to PhD education and related research in changing Arctic urbanism and landscapes. Hwas project leader and editor for the AHO Research Review 2014-2017 ↗. Creatively, he works in design fiction and decolonial narrative in shaping social imaginaries, artistic practice and transmodal scholarly communication. Andrew has been the Project Leader for the FUEL4DESIGN project. For details, see Andrew's website ↗.

Mariana Quintero is a multimedia developer, interaction designer and researcher. Mariana Quintero develops her practice at the intersection where digital fabrication technologies, digital literacy and the ethics and aesthetics of information and computation meet, contributing to projects that investigate the rise of the third digital revolution and how information and digital technologies translate, represent and mediate knowledge about the world. In the FUEL4DESIGN project, she acted as a consultant and contributor at different stages of the project.She is currently part of the strategic direction of the Master's in Design for Emerging Futures MDEF and regularly contributes to various research projects at IAAC | Fab Lab Barcelona.

Corbin Raymond is a South African designer and researcher. He has an undergraduate degree in Product Design and a master's degree in design from the Cape Peninsula University of Technology, previously lectured in Visual Communication Design at Stellenbosch University and now completing my PhD at AHO, the Oslo School of Architecture and Design. His interest has been exploring how we might design for sustainability, and positioning sustainability by design as a focus area between design - and futures studies. Collaboration is foundational to his design and research practices as he explores how we might design for sustainability. Locally, in South Africa, he co-founded an NGO called, CoGo (Collaborative Governance) that works towards collaborating in a Socio-Ecological Systems context, and internationally he works with the World Design Organization's (WDO) Young Designers Circle (YDC) where the focus is on collaboration on the United Nation's Sustainable Development Goals (SDGs). Recent publications include: Raymond, C., et al. (2022). 'Framing scenario thinking in a mode of futures by design inquiry' ↗, in *Proceedings of DRS2022: Bilbao*.

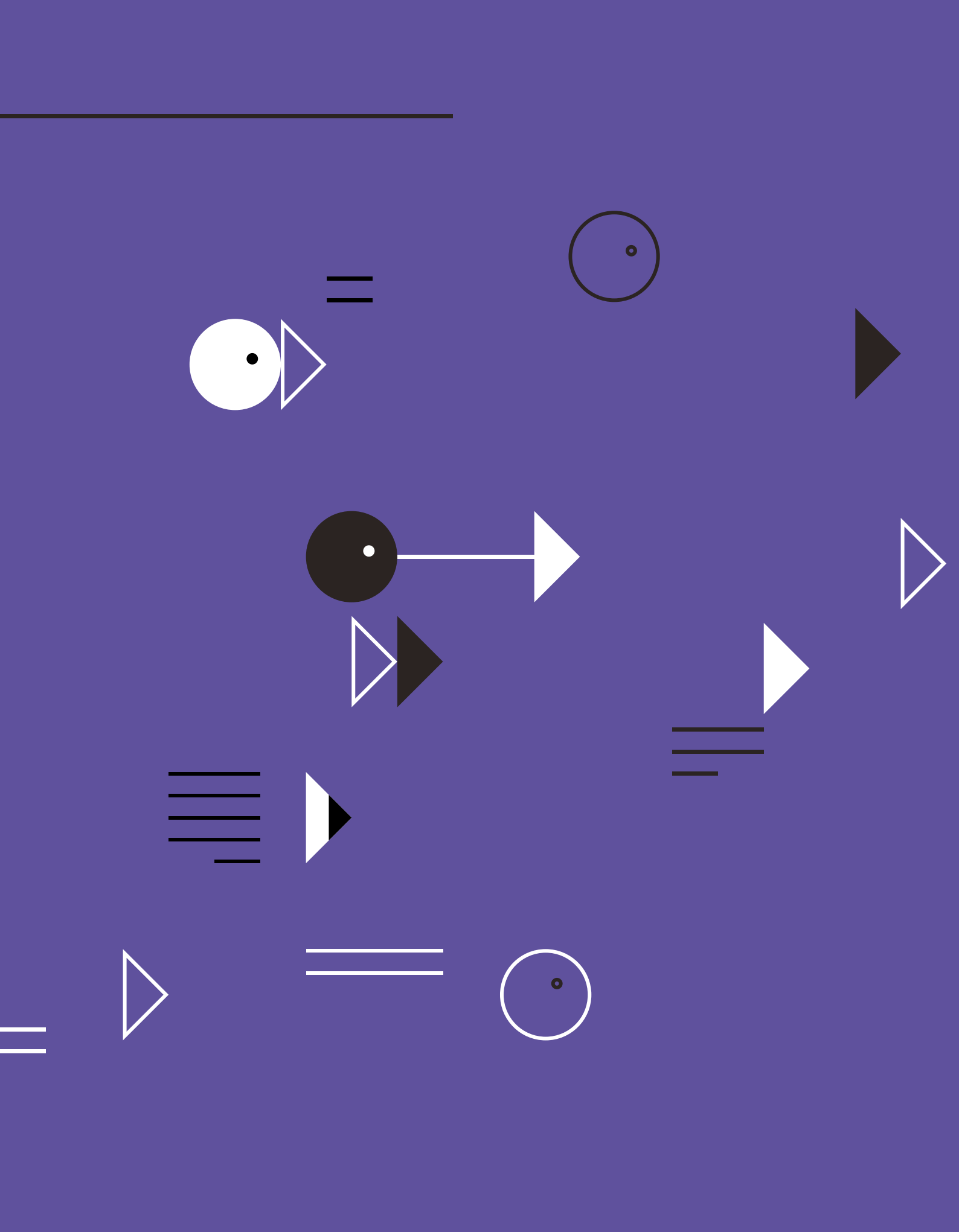
Karianne Rygh has contributed to FUEL4DESIGN as an editor and researcher through work package 106 on the development of the Design Futures Literacies books. As a Norwegian PhD fellow at the Oslo School of Architecture and Design exploring care-based tangible service design for public health, she has collaborated with the Centre for Connected Care (C3), working closely with several leading hospitals and healthcare organisations in Norway. Karianne holds a Bachelor of Industrial Design (Swinburne University of Technology) and a Master's of Social Design (Design Academy Eindhoven), with research experience from the Readership of Strategic Creativity (DAE), part of the Creative Industries Scientific Programme in the Netherlands. Her research centres on the role of design in developing tangible, mediational devices supporting negotiation within multidisciplinary service collaborations.Karianne is a design educator, design advisor and leads her independent design studio. Her recent publications include: Kværner, K., et al. (2020). 'Co-assessment framework to identify person-centred unmet needs in stroke rehabilitation: A case report in Norway'. *BMJ Innovations*, 7: 148-156; and Rygh, K. & Morrison, A. (2022). 'Negotiating care through tangible tools and tangible service designing in emergent healthcare ecosystems'. In Pfannstiel, M. et al. (Eds.). *Service Design Practices for Health Care Innovation*. Cham: Springer. 77-114.

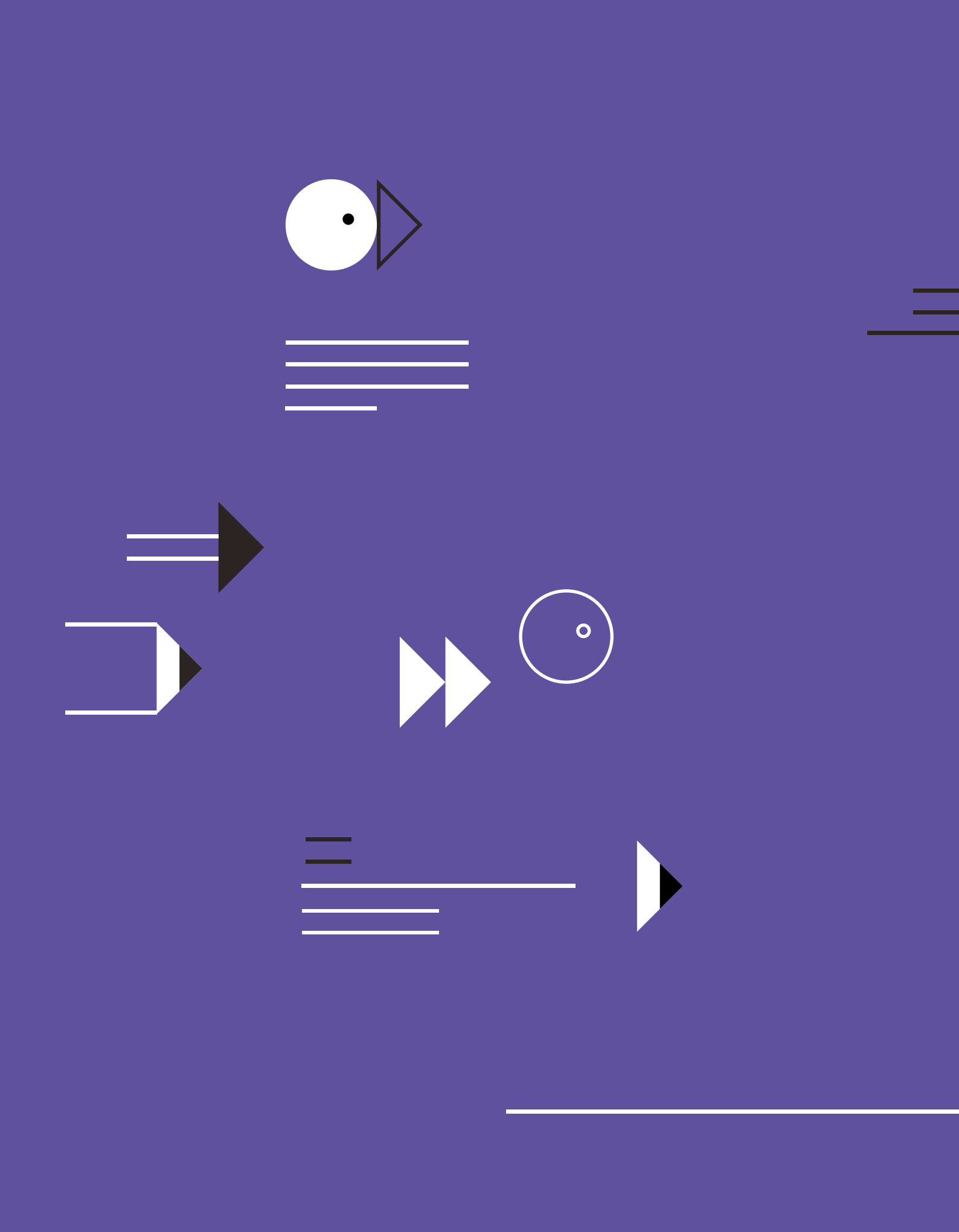
Jerneja Rebernak worked as Project Manager for FUEL4Design and is currently responsible for the research management of the Transforming Collections: Reimagining Art, Nation and Heritage ↗ project, a large UKRI Arts and Humanities Research Council's Towards a National Collection ↗ programme delivered by the Decolonising Arts Institute in collaboration with the Creative Computing Institute – University of the Arts London - and 16 project partners including Tate. Jerneja has 15 years of experience across the Arts, Culture and Higher Education sectors. She worked internationally delivering intercultural cooperation projects including at the Asia-Europe Foundation in Singapore, the European Cultural Foundation in Amsterdam and has been involved as programme manager for the Cultural Centre of European Space Technologies and international coordinator for a large public programme part of the European Capital of Culture - Maribor 2012. She has also served as an Intermedia arts advisor for the

Slovenian Ministry of Culture. In 2015, she joined the Research and Knowledge Exchange Departments at UAL advising on European innovation funding and has managed several European cooperation projects among others T-Factor (Horizon 2020), Fashion-Tech Alliance, Edu4Fashion Tech, FUEL4Design (Erasmus+) and Creative Lenses (Creative Europe). Jerneja is multilingual and holds a BA in Communication Science, University of Ljubljana, an MA in Media Studies, University of Amsterdam, and an MA in Situated Practice from the Bartlett School of Architecture, University College London. Her personal practice evolves across sound, new media art, performance and curating.

Oscar Tomico heads the Industrial Design Engineering Bachelor's Degree at Elisava, Barcelona School of Design and Engineering. He co-directs the Design for Emergent Futures Master's Program in collaboration with IAAC, and is also assistant professor at the Department of Industrial Design at Eindhoven University of Technology. In the FUEL4DESIGN project he was Principal Investigator from Elisava. His research revolves around 1st Person Perspectives to Research through Design at different scales (bodies, communities and socio-technical systems). Ranging from developing embodied ideation techniques for close or on the body applications (e.g. soft wearables), contextualized design interventions to situate design practice in everyday life, exploring the impact of future local, distributed, open and regenerative socio-technical systems of production, or experimenting with multi-species design and cohabitation as a posthuman approach to sustainable design.See for more information on Oscar's publications ↗.

Alejandra Tothill is a product developer, spatial designer and researcher. Alejandra (Jana) Tothill develops her practice at the intersection between academia and industry, between art and design, where digital fabrication technologies, digital literacy and the ethics and aesthetics of information and computation meet, contributing to projects that investigate the rise of the third digital revolution and how information and digital technologies translate, represent and mediate knowledge about the world. In the FUEL4DESIGN project, she worked as an assistant researcher to the Principal Investigator from Elisava. She is currently part of the strategic direction of the Master's in Design for Emerging Futures (MDEF).





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