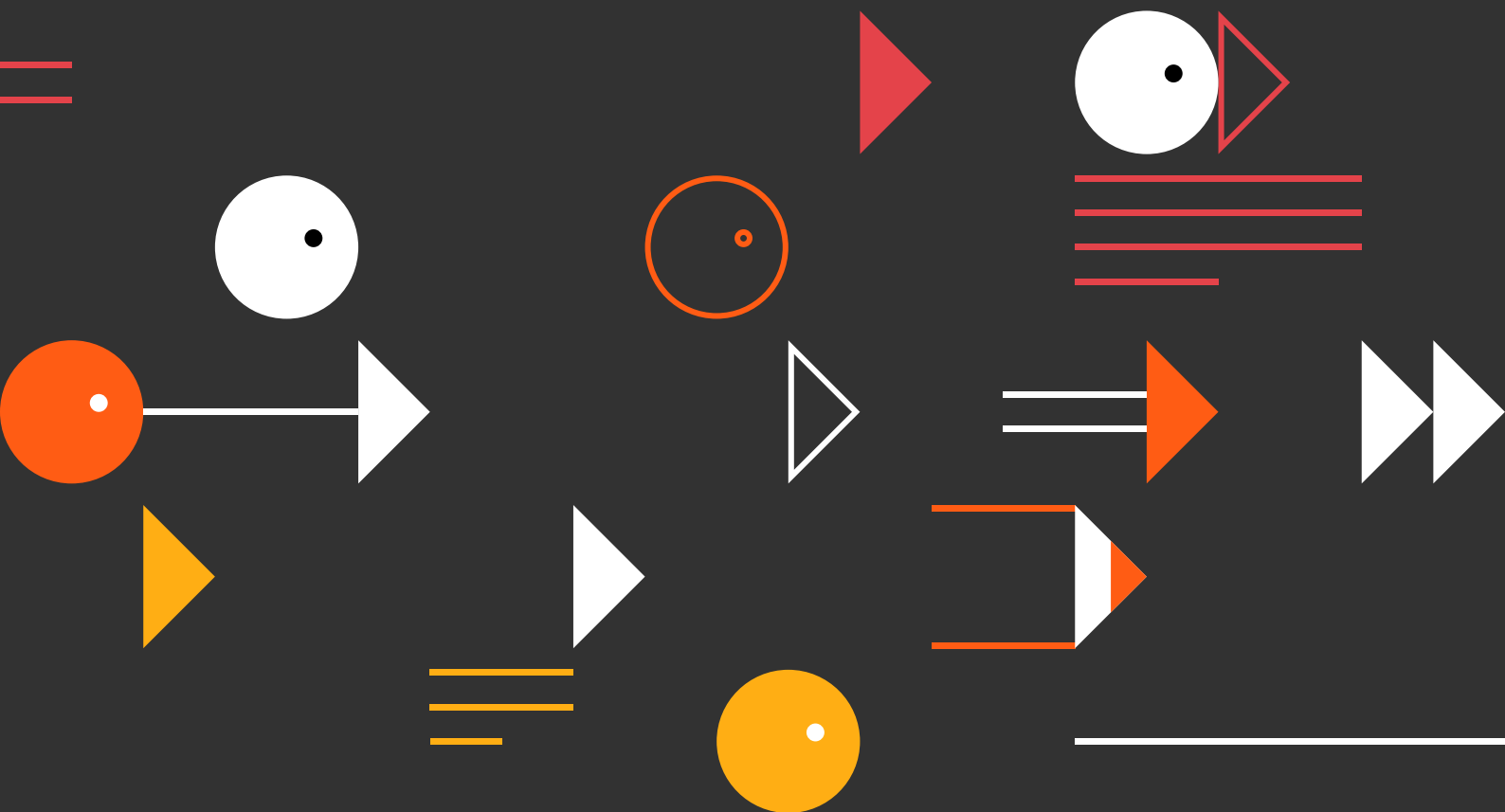


Design Futures Literacies

VOL. 1
PRACTICES & PROSPECTS

ED. ANDREW MORRISON



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Design Futures Literacies

VOL. 1 PRACTICES & PROSPECTS

ED. ANDREW MORRISON



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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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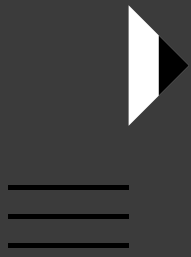
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PREFAC ORIENT

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PREFACE.
ORIENTING

FUTURE EDUCATION & LITERACIES FOR DESIGNERS





Summary of FUEL4DESIGN

Background

The two volumes entitled *Design Futures Literacies* are the outcome of the Future Education and Literacies for Designers Project (FUEL4DESIGN). The project was developed by four European design universities and investigated the dynamics of futures design literacies through six distributed work packages. These consisted of experimental ventures into shaping relations between making, pedagogies and research. Spanning three years, FUEL4DESIGN was funded by the ERASMUS + Strategic Partnership Programme, aiming to support student and teacher competencies in an ongoing development of relations between design and futures.

As design is one of the few disciplines that work pragmatically and creatively with the future beyond the here-and-now, the project was seen as a means to building capacities, resources and creative critical engagement through which design Master's and PhD students and teachers might together shape their 'Design futures Literacies'. The project identified gaps in facilitating design competencies, fluencies and vibrancies (engagement). This was informed by exploring tangled relations, design roles and practices in navigating futures as plural, complex, contested and emergent.

'Anticipatory design pedagogies' were ideated and realised through sustainable, proactive, speculative and pragmatic preferred, plausible and potential futures. We addressed master's students' learning design-futures to enter changing 'industry' and public services. We underpinned doctoral level designer's training to become critical designer-researchers.

We supported students in taking care ahead of time via critical practice and informed action in situating 'what-if' modes of knowing. A medley of online, hybrid and in-place 'Design Futures Literacies' were embodied and critiqued to provide fuel for young designers designing for complex nearby tomorrows and long-term sustainability.

Objectives

We aimed to develop, test and implement new approaches and resources to provide learners and educators with innovative and adaptable tools to imagine, perform and enact a plurality of futures by design. This was to equip design learners and educators to deal with real-world issues on techno-digital futures, climate crisis, and political instability.

We further aimed to connect experimentation and design theory via invention, imagination, speculation, and through design making activities such as via prototyping, scenario building, and foresight. In the context of the COVID-19 global pandemic, intended objectives were adapted and configured to a pivot to digital delivery and didactics.

This heightened modes of online access, diverse representations, types of activity for learners and support for educators. We sought to facilitate of self-directed and digitally mediated pedagogies, exploratory encounters and courses, workshops and public events that embodied experimental, generative activity and action centred engagement and exemplars.

We kept to core aims to prepare, orient and activate design-futures learning for emergent conditions and changing contexts, where creative criticality could be realised, critiqued and anticipated further.

Implementation

We included a diversity of action-based learning resources in support of wider learning needs and goals in the context of specific sites of experimentation and implementation. We developed interplays between original print and face-to-face activities and materials and their digital access and activation. These were addressed through various interfaces, types of learning tasks, from small actions to wide reflections, and through teacher and tutor presence, online lectures and workshops.

Activities were supported via Zoom and Teams, using online tools such as Miro. I01 and 2 activities ranged from card-based play in shaping worldviews on design projects to metaphors in shaping futures research reflections, not tied to disciplines or programmes. I0s 3 and 4 were congruent with design futures courses and used personal digital and multimedia 'diaries' and presentations and co-designing in Miro group work. I05 supported methods for teachers and was connected to public events and training for their uptake of multi-pathway resources. In I06 reflections included activities of co-writing and publication of a book, with reflection on the projects workings presented in related media rich and dialogical online and international events. We chose to divide this book into two volumes, for readability and in order to make connections between the two volumes of content.

Results

FUEL4DESIGN designed and trialled open access online and printable design literacies learning materials for master's and doctoral design students, located in contexts of uncertainty and change. We created a digital repository of futures design resources as plural, ethical and situated and enacted via self-directed, adaptive and transformative pedagogies.

This involved diverse student experience of encountering, using and adapting content, tools, methods and learning activities to needs, tasks and learning pathways. Novel tools, concepts and instances of how new critical creative knowledge exchanges were taken up and apart in near and long-term futures alternatives in an ongoing present. A design centred 'pandemic pedagogy', platforms, teacher support and events were achieved and analysed.

Outcomes included cases and critical reflections on what and how design futures learning may be advanced, in online-only and adaptive, responsive hybrid formats. Focus on relations of design and care, agency, time and situation via dynamic modes of address and articulation for civic, critical and creative worlding were included in these open access books. This positioned design futures literacies in wider societal, geopolitical and educational contexts.

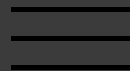
About

For more about the FUEL4DESIGN Project, please see: [Link ↗](#)



PREFACE.
ORIENTING

ON THESE VOLUMES





Motivations for publications

We've put together a thematic collection of the project's work packages and a set of inter- and cross- related position chapters and essays. Between us we produce and exchange experience and knowledge and we convey this in a variety of ways and fora, including formal research ones. We contribute to the ongoing professionalism of theoretical and applied design inquiry in a diversity of domains and collaborations. We are in the main committed to excellence in teaching and research and to their rich intersections that characterise much of what we achieve.

In composing what we needed to place in two linked volumes it has become clear that of all the fields of design research, the field that is least formally a part of most of our institutions in design, is design education itself. Yet, design education is the one shared domain and activity that fuels our schools. For this reason, these books focus on futures in design education.

The books include research inflected accounts of the project's workings and outcomes. They are, in a sense, heuristics or devices with and through which to think. The collection of work and reflections offer ventures and experiments, experiences and pathways. These have been intense, challenging and inspiring. We offer them not to lockdown 'a pandemic pedagogy' to offer a deliberative diagnostic for the future of design education. Instead, the publications are offerings of our experiments and ventures in bringing futures and design together and in looking to building relations design futures pedagogies

The books provide multi-level, multi-authored and multimodal reflections on ways design futures literacies have been conceptualised and realised in the FUEL4DESIGN project. As the project progressed, a set of linked online (in majority) resources were developed as a response to the conditions and constraints of a global pandemic lockdown. This was supported by a variety of modes of teaching, learning and communication about the work that was done that has contributed to the longer essayistic chapters in Volume 2.

Partial, not impartial

We are not impartial in what we have tried to do and claim to stand by and argue for, even though we have done this in a mode of making-inquiring-reflecting that is located in 'becoming'. We are partial to, the propositions, positions and practices we have developed and have been able to work with between us.

We work with, through and towards shaping relational links and affinities, and preferences. We are partial to some of these, but we offer them as another form of resource into design education and futures, mindful that we are only one project and four teams from four Europe-based design schools.

We've tried to convey and open out to some of our experiences. We acknowledge that our work has been difficult, entangled and risky. It's been motivated by our deep concern for our students and our colleagues and ourselves as professionals in a wider community of design education. That said, what we offer is a relational, not universal, account and gesture of sorts to a wider community of design learners, teachers and researchers.

Multiple audiences for the books

These two volumes have multiple audiences with varying interests and needs, from practice and pedagogy to research and reflection. The books are geared towards design educators, graduate students and design researchers who themselves also venture further into exploring anticipatory perspectives and practices around futures in design education and research.

The books will hopefully also especially be of interest to design educators and to researchers and policy makers of design. As we mention a few times in the introductory 'partial state of the art' on design education and futures and in the essays that follow, design universities are fuelled by design educators. We are a mix of practitioners and professionals, designer-researchers and researchers of design.

Our design pedagogies, and those that are anticipatory in stance and reach, are only possible because of the motivations and attention of our students. Master's and doctoral students might find parts of the books useful for specific parts of their own learning by designing and learning to design, research through designing and design research. Perhaps some of them might even be motivated to develop Master's and PhD theses in design education and its literacies and pedagogies. As motivation, you'll see we've included design work and research reflections from students who've contributed to the project and been connected to its events and specific domain area topics.

We hope that the books will also motivate our colleagues to value even further the intense, changing and demanding nature and substance of their own design pedagogies and to look to ways to perhaps draw on some of the primary and secondary material included and presented here.

A limited mapping, a massive field

We've tried to make connections to a diverse body of research and to position our ventures into design futures literacies in relation to other studies and reflections, inside and beyond design. It's not possible to cover the very many fields and domains that are covered in design schools, even though we have expertise in some of these, such as fashion, in the wider project team.

The design schools within which we work and have carried out this project are themselves very different, historically, institutionally, in orientation to the professions and research, in languages, cultural diversity and funding models.

What we do have in common are dedicated staff and highly motivated students, and these are local and national, and increasingly international. So too are the staff in our establishments who are themselves design nomads in a sense that they shift domains and interest, courses and collaborators, projects and teams, tools and assessors. And they too are representative of places and cultures, experience and expertise that is filled with difference as much as it is commonality.

This has been apparent in the many events we have held during the project that have been far more the richer for participation and a diversity of perspectives beyond our own institutional, national, disciplinary and cultural borders and arenas.

An open access outcome

The books are open access. In PDF format, they're free of charge. No subscription fees. Please share them under the Creative Commons licence. You can download and read the PDF on a screen in ways you select and prefer.

A public resource for re-purposing

You can refer to the material as you choose in your own learning, teaching and research. And in the spirit of Creative Commons, please give credit to what you use. The books are composed to be read in a variety of different ways, depending on interests, need and time. Search, cross, select a chapter or subsection that interests you. Read a longer item or read sections more as modules.

We hope that the volumes work this way and that they are resources to which to return and perhaps reframe your own thoughts and replace ones we might have suggested. Do let us know your thoughts and the paths the material in the books and the companion website has suggested you follow or influenced you to make.

Do please forward the documents to anyone you think might find it useful.

Working with various modes and shifting scales

Like other design students, teachers and researchers this work has taken place largely within the formal boundaries of the global pandemic. We attempted to shift our work and to support our students' learning through the project, indirectly and directly.

This was through specific Master's classes and PhD summer schools, in providing online resources parallel and affiliated with courses project material. This took place in on site and online workshops and in special sessions tailored for specific courses, and in the projects many public online.

Two of the project partners more directly ran full and challenging courses and were able to pursue detailed and connected pedagogical trajectories (see for example student videos in I03) and others supervised PhDs directly and indirectly connected to the project. We've included collaborative writing with several of the doctoral students and included material and reflections that have informed and challenged our thinking.

Moving forward

We've been a transdisciplinary team and we are still learning how to learn, design, teach and research design futures literacies in our own workplaces. Do feel free to contact us to hear more about the project and perhaps to discuss your own work with shaping design futures literacies in your own design educational contexts, framing and practices.



PART I.

SITUAT

ING

PART I.
SITUATING



VENTURING INTO DESIGN FUTURES LITERACIES



BY Andrew Morrison





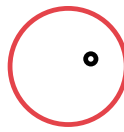
Ventures with Design Futures Literacies

Contexts, crises and change

As a quarter of the 21st century will soon have passed, it has become increasingly evident - societally, ecologically, politically and economically - that human and planetary survival are in deep turmoil. Concerted action through more-than human actors and agency is needed if we are to avert climate disaster and effect sustainable, systemic and transformative change that respects the environment and supports more ethical and distributive social justice. Design has undeniably contributed to our current contexts through its commitment to assumptions of growth without consideration of the exhaustive political economic modes of extraction and unbridled consumption that deny the very long-term sustainability upon which planetary survival depends. Design education, by implication, is itself therefore also in crisis.

Nocek & Fry (2021) argue that design education is undergoing a 'crisis by design' where sector and educational institutional values and practices are central. These not only contribute to but are complicit with highly problematic underlying logics and prevailing policies of design with foundations in extraction for profit and promotional consumerism. Contradictory, in a self-destructive trajectory, design education and its professional and research partnerships, has begun to be more fully acknowledged as systemically reproducing relations of making, power and engagement that to a large extent are lodged in industrial era models of innovation and development (e.g. Engholm, 2023). The tensions and constraints of approaches to design - as an expedient problem solver, via linear planning, the generation of short-term solutions and the collusion of participants - are all the more troubling as they depend on their not being exposed, made transparent, challenged and countered.

What then are design educators and students to do when design's complicity in the making, selling, circulation and destruction of material resources is unavoidable? How are we to 'square off' calls and emergent practices around re-use and repair in the promotion of circular economic models centred on substitutional rather than deeply transformative thinking and action? These are confrontational matters for design education, practice and research that will continue to remain if attempts are not made to address and resolve matters of unquestioned growth and behaviours and policies that avoid fundamental contradictions and barriers to long-term sustainability. They entail thinking within and beyond times of crisis (Sweeney, 2022).



◀ **Figure 1**
Out the other side of the lockdown. Using the Futures Philosophical Pills with design bachelor's students, 2022, Central St. Martin's, UAL. (Image credit: UAL).

Answering these questions and finding ways to meet and overcome such challenges demand that we contribute towards a design education that facilitates and supports student learning for alternative futures [Figure 1]. Such futures are the ones that our students will inherit and transmit further and must therefore not be driven by the planned routes of forecasting strategic management and directed design making, typical of earlier Futures studies. A need to escape learning as an unquestioning reproduction of givens (Biesta, 2015) and working towards learning as transformation becomes key, reaching above and beyond contemporary constraints and legacy limitations towards a dynamic generative openness to shaping futures by design (Morrison et al., 2021a). This is an approach that addresses matters of agency, action, complexity, systems and ecological, sustainability in non-dystopian frames (e.g. Poli & Valerio, 2019; Sevaldson, 2022; Tsing, et al., 2017; Ward, 2021; Slaughter, 2004).

Futures Education Literacies (FUEL) for designers

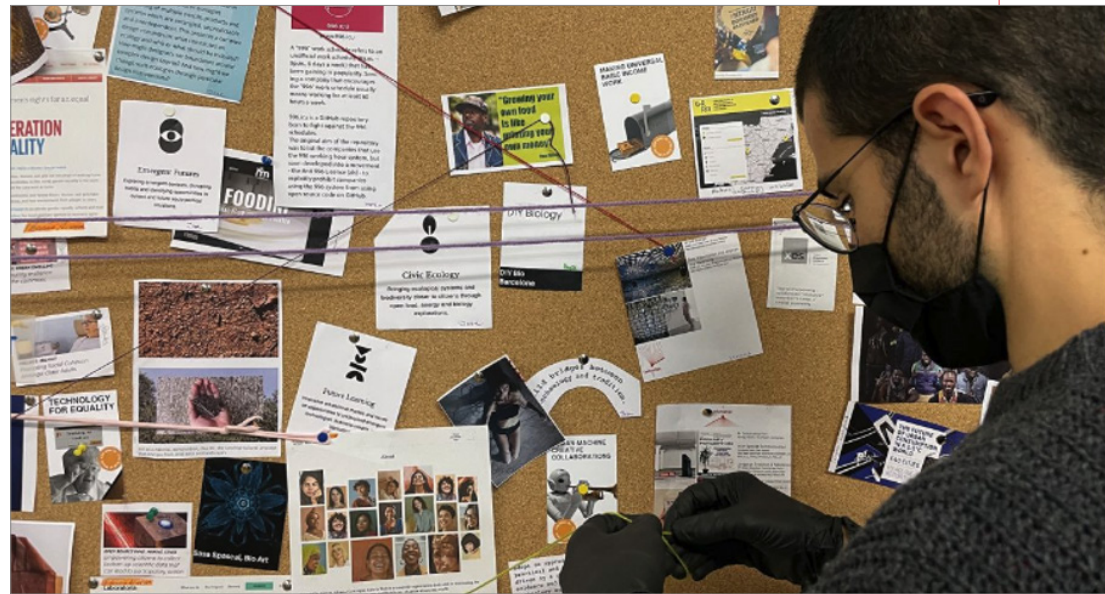
Design Futures Literacies is comprised of two volumes providing an experiential and experimental set of ventures and activities that sought to investigate relations between design and futures. This approach has asked that we engage in a mode of becoming that allows for processes and activities to emerge and unfold, where the unexpected and surprising has room to flourish in the context of critical creativity (Morrison, et al., 2022). Design Futures Literacies is the outcome of the FUEL4DESIGN project (Future Education and Literacies for Designers) developed by four European design universities. The three-year project investigated the dynamics of futures design literacies through experimental ventures into shaping relations between making, pedagogies and research. Funded by the ERASMUS + Strategic Partnership Programme, the main aim has been to support student and teacher competencies in an ongoing development of relations between design and futures.

Instead of attempting to span all domains of design, including the methods, tools and techniques we deploy in our professional work and situated research, the project engaged in a specific set of heuristic developmental and exploratory ventures. These also included giving ethnographically inflected accounts of situated anticipatory and responsible design futures and learning (e.g. Pink, et al., 2022).

Working with master's and doctoral students and their teachers the project supported, prompted and challenged given approaches and practices, offering routes to different, emergent and alternative futures. Central to this was an orientation to process philosophy that took a stance of supporting ways of becoming rather than ways of being. This approach centred on building relational anticipatory design pedagogies through approaching design as a disciplinary and transdisciplinary interplay of practice and analysis, actors and activities, contexts and communication.

In an anticipatory, rather than a confirmatory sense of design, futures are seen less as novelty and innovation in ways design has chased products or market or pursued trends. Rather, design futures are understood and materialised as sites, processes and potentials to work with critical-creative prospective knowledge development, generation and critique [Figure 2].

Figure 2 ►
Collaborative Documentation
and Swarm Intelligence
session, 16th November
2020. The activity revolved
around building a collective
framework to document
explorations using the existing
digital platforms and building
a physical map of resources
for the design studio. The
goal was to explore and
develop forms of aggregative
documentation and building
collective intelligence
resources. Master's in Design
for Emergent Futures (ELISAVA,
IAAC, Fab Lab Barcelona).
(Image credit: ELISAVA).



In the two volumes of this publication, we present reflections from FUEL4DESIGN as a wider offering to our colleagues in design universities across the globe, not only in the context of a European-funded and located project.

In tune with the urgent need for our sector to work together to share and shape initiatives, moving beyond vertical affinities towards establishing horizontal and transversal alliances and actions, we have thus referred to a large body of related design education and design research. This has been done to support the surfacing of what may be dispersed arguments and critically important experiences.

Links between design and futures have been central to a number of different publications, perhaps most substantially in the key edited collection spanning *Design and Futures* (Candy, & Potter, 2019), including design education. It is therefore important to emphasise that in *Design Futures Literacies* we do not refer to the future or a future but instead, that which lies ahead, that which might transpire, may come into being, or be projected and built through design. This encompasses diverse, multiple and unfolding futures: potential and imaginary, anticipatory and plural ones (Escobar, 2018).

Changing design education

Design students, teachers and researchers have experienced a plurality of crises: this may be first-hand in their own lives or in terms of recognition and sensitivity to climate and other ecological and economic changes in their learning, awareness, activities and work. The global pandemic challenged us all to respond to the power of bio-human change dynamics brought about by the force of a minute, invisible, airborne and mutating virus. Suddenly, attention to systemic relations and design and to matters of sustainability and more-than-human design amongst others, became unavoidable parts of rethinking design and design education. Such themes had already been key to many design study programmes and projects.

Design schools have responded actively and innovatively in finding ways to support pedagogical endeavours that have themselves needed to adapt to additional and new changing contexts and shifting demands. Despite what in many instances and settings have been stalwart strategies and deep commitments to facilitate engagement in foster active learning, learning to be a designer or a designer-researcher, and carrying out design teaching and supervision have been seriously and fundamentally challenged by what is increasingly being characterised as compounded crises. The co-occurrence of the climate emergency and a global pandemic revealed the complexities of interconnected and changing contexts and conditions, together with flows and changes beyond human direction and admission, acknowledgment and abatement.

In such contexts of uncertainty, change, crisis, change and contestation, our design pedagogies are in need of fundamental redesign and, some would go as far as to say, redirection. As Rodgers et al. (2020: 314) argue, ‘... prior to design’s response to the Covid-19 crisis the state of design might best have been described as being trapped in a number of paradoxes – sustaining the unsustainable, disciplining the undisciplined, reconciling future visions with harsh realities, and others...’

These paradoxes point to Design as being complicit in the framing and perpetuating of global systemic human inequalities as well as the environmental consequences of anthropocentric assumptions and related design policies and practices directed towards dominating and controlling our earthly habitats. With the recognition of an Anthropocene as a new planetary era ushered in by human choices, policies, and habits, and where dynamic and complex processes now transpire without us and affect us recursively, design and tertiary sector design education are faced with enormous, pressing and urgent challenges and needs.

Such challenges and needs are already being actively addressed by many design schools, professional agencies, organisations, communities, R&D and research funders. However, many of the responses are located within incremental and adaptive approaches to innovation and change. These constrained approaches are at odds with the urgency of informed acting within a diminishing window of opportunity as regards climate change mitigation and arrest.

They may seriously stymie ways design universities and educators may work to design anticipatory alternatives and actual futures. These are ones that need to reframe and counteract the very premises and practices through which we have arrived together, across the globe, in urgent, pressing post-normal times that need 'another design' for 21st-century contexts.

Incorporating futures in design education, we argue, involves developing and enacting futures in a plural view and in and through experimental and exploratory practices. Reaching beyond immediate crises and linear futures - characterised by linear planning and the filling out of blueprints and assumed trajectories - futures, we suggest, ought to be approached as cultural and design imaginaries. Yet, design futures contracts and practices thus also have the potential to constrain and contain design futures shaping.

Core concerns and key orientations

Drawing on our original project aims, experiences and changing contexts of the past three years, a number of core issues remain pertinent and raises questions concerning several matters we have engaged with in exploring design future-oriented literacies and literacies for shaping design futures:

What does Design need to do and become to meet and counter the compounded, dynamic climate, as well as ecological, societal and systemic crises with their brutal effects on vulnerable citizens, communities, ecologies and nature?

In what ways might anticipatory centred views and practices work to support students and teachers in developing design futures literacies that contribute to transforming design's roles in mitigating emerging crises and supporting long-term sustainable trajectories of systemic change?

Why, how and when may aspirations and expectations on developing design specific futures literacies challenge assumed norms and practices in design pedagogies?

Our ventures into teaching and learning with futures in design have been varied, risky, engaging, challenging, and, at times, surprising too. What they have in common is that they have been infused with an interplay of speculative making and pragmatic deliveries (e.g. Helgason, et al., 2020). Known and emerging students' needs and our own

FRAMING THE UNCERTAINTY OF TECHNOLOGY BY UNFOLDING, REFRAMING & ENVISIONING SCENARIOS

PHD DESIGN
FUTURES
THINKATON

Envisioning futures is a big-time challenge. Futures are multi-layered & multi-faceted filled with many possibilities and probabilities. For design researchers and practicing designers, it is paramount to be futures' literate. The ability to envision future visions, think of alternative futures and develop scenarios is an indispensable skill.

Join us for a 3-days workshop to test and discuss the Design Futures tool-kit we co-created in the FUEL4Design project*. The "FUTURES Thinkathon" event will be conducted digitally on Teams and Miro platforms.

CALL FOR PARTICIPATION!

SAVE THE DATE!
23, 24 & 25 November 2020

To participate, please send an "expression of interest" indicating your PhD programme and institution to Ammer Harb (ammer.harb@polimi.it) by **15th of November 2020**

Meet our special guest **Prof. Derrick de Kerkhove**, sociologist, linguist and director of the McLuhan Program in Culture and Technology from 1983 until 2008. He will trigger the discussion on possible futures by challenging technological determinism facing topics as the future of memory, artificial intelligence, fake news, and digital unconscious.

(*) www.fuel4design.aho.no

◀ **Figure 3**
Poster for the PHD DESIGN FUTURES THINKATON, 23-25 November 2020, PoliMi. (Image credit: Ammer Harb).

changing pedagogical and related research informed educational practices have been central to our activities.

In conjunction with the more macro-level questions above, we have worked with the following key problematics:

What design pedagogical approaches and related design research strategies might we explore to devise principled and flexible alternatives through which students can develop anticipatory learning capacities and competencies in developing their design futures literacies?

Which tensions, contradictions and challenges surface in readdressing matters of power, articulation, agency when exploring a reappointing of design values and practices in emergent anticipatory actions and practices?

How are we as Design educators to tackle demands of un-learning and re-framing the assumptions and preferred world views and normative approaches that have led us into an impasse of contradictory value systems and behaviours?

What tools and which methods might we adopt and develop afresh to cultivate and nurture futures inputs and interventions into design education and its related research?

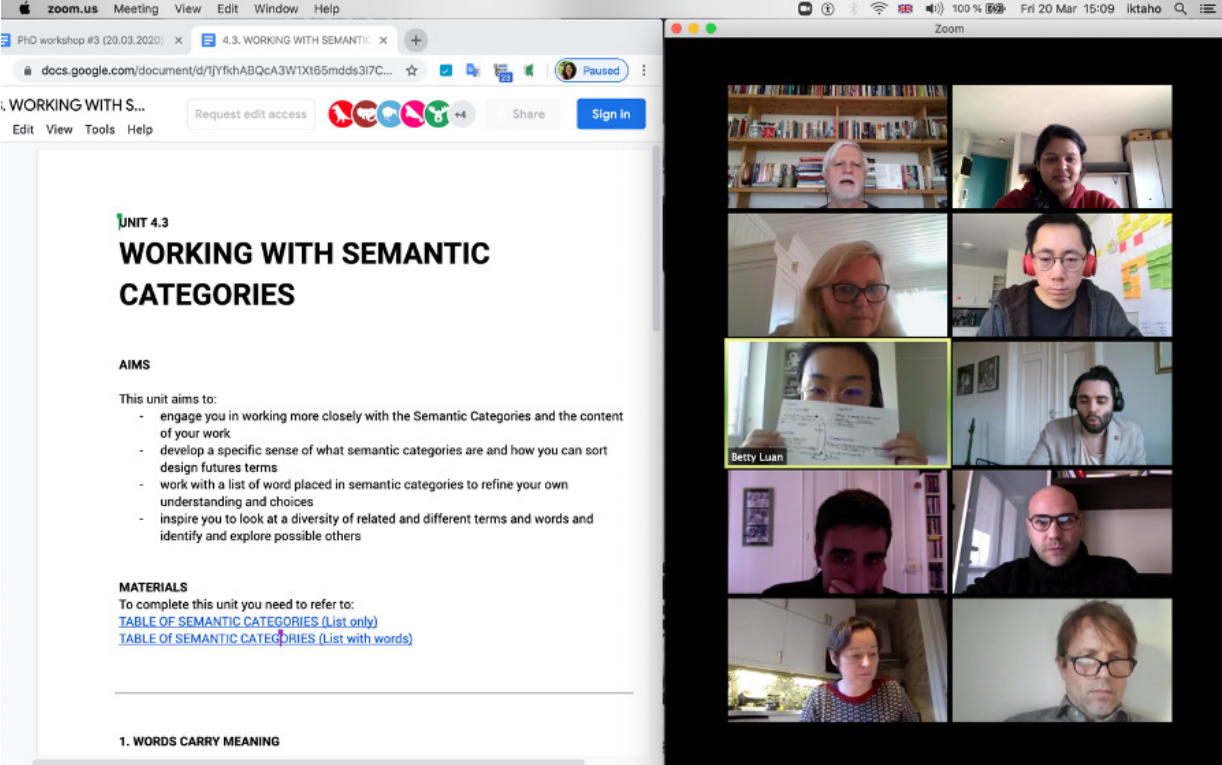
What exploratory and experimental devices and processes might be generated to support master's and doctoral students in working creatively and critically in their own productive shaping and independent learning about design futures?

In working to make sense of these questions educationally in, through and for design, and to more deeply understand the content and workings of design literacies and pedagogies, we have also needed to rephrase our original project plans.

A digital pedagogical pivot

In response to the COVID-19 global pandemic, we needed to reposition our modes and means of engaging with such questions in a digital pedagogical pivot [Figure 3].

The two volumes that make up *Design Futures Literacies* include examples of contexts and student work but also our own changing design futures literacies as design educators and researchers. That said, many matters are not covered, such as a needed deeper focus on technology and design, not to mention the real and difficult processes of working out how to work productively with the sciences and business to pursue and position collaborative futures literacies through genuinely inventive and innovative transdisciplinary designing [→ SEE FEATURE 1].



◀ **Figure 4**
Early Zoom session with pre-use of Miro, on Working with Semantic Categories (Unit 4.4) from the DESIGN FUTURES LEXICON, with AHO PhD students, Oslo, 20 March 2020, PhD Workshop #3. (Image credit: Palak Dudani).

On key approaches

Positioning emergent needs and changes

Here it was key to see design as problem finding and not problem solving. This distinction, as we take up below, marks a fundamental ontological and pedagogical shift from what have been the prevailing approaches to ‘industrial age’ framings of design and design inquiry. In essence, design has been steered by a mode of ‘solutioneering’, embedded in market-driven practices and exponential growth-based models at the cost of people, environment and planet. These values and practices were manifest in much of the university-level design education in the 20th century. In contrast to the technological determinism, extraction of natural resources and the presumption of ‘design as saviour’ in this approach, FUEL4DESIGN has joined other design educators and researchers on a different path already oriented towards the pragmatics of finding and shaping more sustainable and durable relations between making and knowing.

This has been no simple collaborative endeavour. This required us to engage with a host of challenges to design education that is part of wider societal and ecological complexities. These occur in the context of wider uncertainty around environmental, geopolitical and societal change, from climate action to changing consumerist behaviour. In addition, these challenges are entangled within our institutional and disciplinary structures and practices. Working with design futures literacies unavoidably brings many of the tensions and contradictions of our own work and professional settings into relief. It demands that we look closely to why our curricula and its pedagogies are structured and realised as they are, and what values and assumptions lie therein. This was taken up, for example, in an early session in Zoom in the DESIGN FUTURES LEXICON, that looked into terms, semantic categories and meaning derived from contexts and processes [Figure 4].

PoliMi Masters Futures' Fictions module

TEACHERS: Manuela Celi & Ammer Harb

NAME: Emotion Shield

YEAR: 2021

COURSE: Concept Design Studio, MSc Integrated Product Design

STUDENTS: Malak Alsuwailam, Nicole Beatrice Bonacia, Carlo Alberto Codazzi, Lara Ingrassia, Rohit Rana, Ottavia Scarabelli, Zhixiang Tao, Joseph Danilo Varanese, Chenxu Wan, Yinglan Zhou.

Emotion Shield

A wearable head piece that allows users to hide their real emotions behind fake ones. Crafted by makers as a DIY project to protect wearers from imagery spying through thermal IR cameras and avoiding surveillance and privacy issues, in a context where the advancement of these technologies is being abused and used to read citizens' emotions.



Simply put, we can no longer pursue a design education that is complicit with political economic models of profit-first at the cost of planetary survival. This means a major rethinking of the purposes of design education, its ethical pedagogical practices and the types of futures literacies and design anticipatory competencies we are instilling in our students to face and response-ably shape what are indisputably complex, uncertain and changing futures. Under the thumb of New Public Management discourses and their strategic forces, design education and design universities must first be led and realised as venues for generating change and continuity by design.

Design universities and colleges are institutions that exist not as management activities but as dynamic sites and venues for exploring and generating the very kinds of offerings and responses that assumed values of neoliberal models have plainly failed to foster. In contrast, future design education and futures in design education must engage in matters of political economy, cultural plurality and curricula change that is centred on systemic and ecological sustainability in and through which non-anthropocentric ethics and anticipatory human participation is paramount.

Reconfiguring design education

The two volumes of *Design Futures Literacies* synthesise and problematise these changes by drawing together and differentiating this rapidly expanding and diverse body of work (see in Volume 1, PART 1: **On Design Education** and PART III: **Design Education Reconsidered**). The two volumes gather a wide array of related publications, some still somewhat diffuse and arguably under-communicated between design educators and design researchers. We hope that these will provide support and motivation for the further growth of design education as a specialist and research infused pedagogical pursuit alongside, within and across other domains of design.

Design Futures Literacies engages with emerging and demanding changes in design education in the intersections and potentials between design pedagogies and design as knowledge exchange rather than separation [Figure 5], while also focusing on what we have broadly termed ‘futures’. Futures is of growing importance for design education and has been the core concern for the FUEL4DESIGN project and has directed the ways in which the two volumes have been developed.

Futures in and through design education

All in all, these issues and challenges have led us to perhaps the strongest distinction we have arrived at through the FUEL4DESIGN project, one that was embedded in our collective design and shared thinking, together with common aspirations from the outset. This distinction has been between prevailing views and approaches to the futures of design education, to focus and activity on futures in and through design education, that are situated in a mode of emergence, becoming and creative-critical emergence.

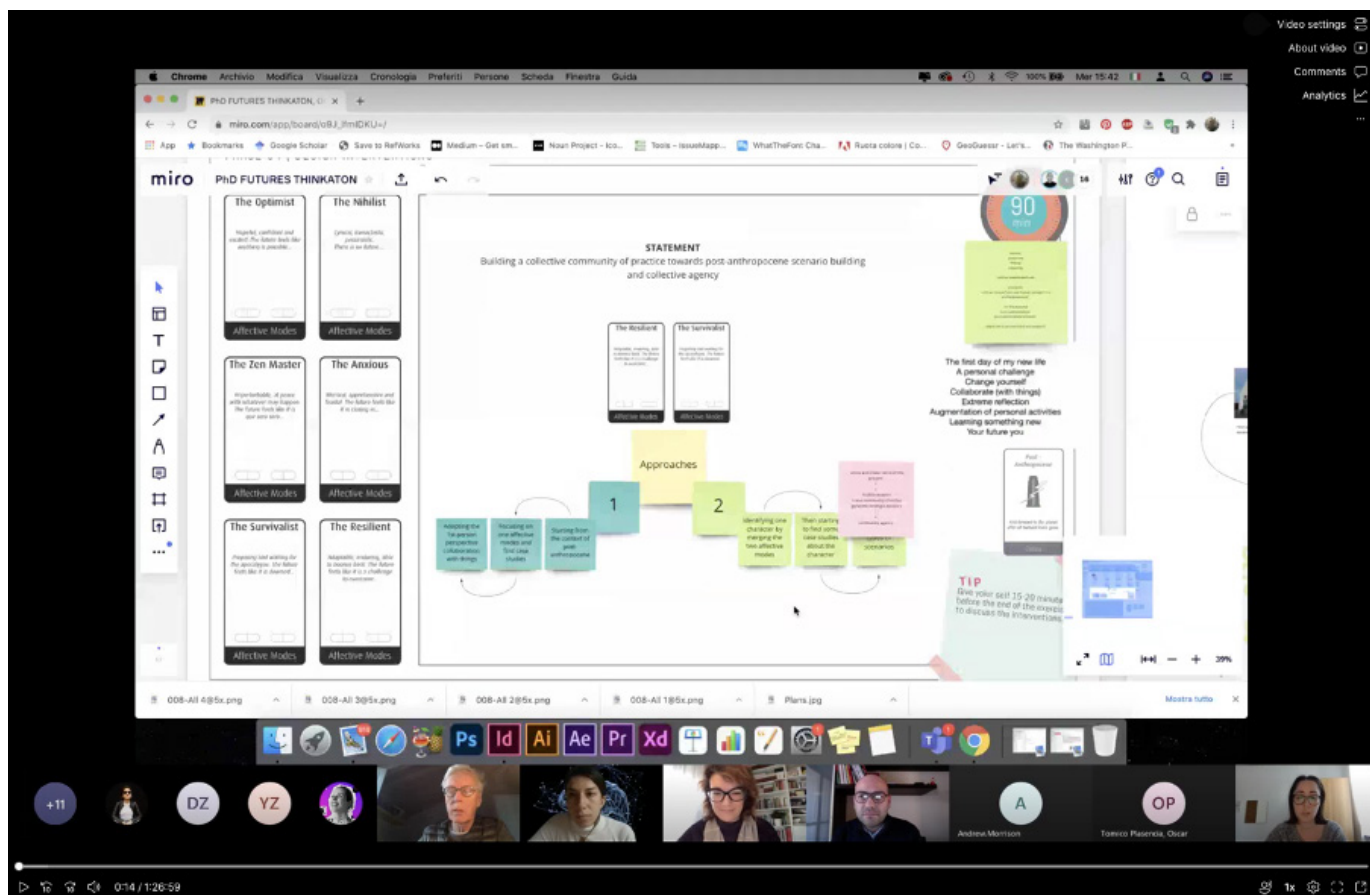
To summarise, in FUEL4DESIGN we have explored and positioned attention in design education to exploring ways to enact futures views and methods in, across and through

creative and situated design learning linked with critical, recursive and relational pedagogies. We have arrived at this distinction through our conceptual framings and re-framings of design, futures and literacies in a relational ontology that draws on perspectives from within and outside design education and design research. In Volume 1, emanating from the project, we take up these matters in two chapters on design education. In Volume 2, we frame this perspective in the first essay. This is followed by seven further essays elaborating on our experiments and endeavours to engage with ways of working with futures and design, pedagogically.

For us, a 'futures in design' approach is one of the processes, acts, experiments and ventures into designing in which our tools, techniques, methodologies and methods are made tangible along with their and intersections and 'transductive' and intra-methodological means and manifestations. In *Anticipatory Design Literacies* in Volume 2:

We conceive of an adaptive, flexible, resilient and futures engaged Anticipatory Design Pedagogy that has at its heart not only compositional methodologies. It works transductively, that is with and through and realising relations between and within multiple materials, processes, dynamics, participants, systems and articulations. Together, in combination, relation and difference - by being risky and new, exploratory and prospectively suggestive, offering or altering, disrupting or problematising - these are also designerly in their anticipatory articulations. This is so structurally and communicatively, emblematising thereby their aesthetics, rhetorics, performativities and ethics as reaching toward alternative futures through designing.

Figure 5 ►
An internationally attended Miro workshop on DESIGN FUTURES TOOLS. Using the FUTURE PHILOSOPHICAL PILLS, IO5 FUEL4DESIGN. (Image credit: FUEL4DESIGN).



Design imaginaries and ‘stacking complexities’

Futures in design encompasses ways and means to what technical, cultural, environmental and the systemic affordances and affects they might allow and reveal. A futures-in-design approach to learning and teaching, making and researching encompasses interconnected anticipatory activities that are centred around dialogue, exchange and emergence. Such activities include ways and modes through which acts of designing futures and engaging futures thinking and methods might convey and materialise socio-technical imaginaries and situated pedagogies. Importantly, these need to reach beyond ‘lockdowns’ in ideas, practices and critiques that in design education may not reach into working with futures, whether compositionally or in exploring possible, alternative and ultimately preferable ones. In essence this is a matter of what Betti Marenko (2021a), a lead member in the project, has termed ‘future-crafting’, a dynamic view and practise that she elaborated in the context of living with digital uncertainty.

In not separating but relating ways of learning and teaching, thinking and making, our intention has been to reach into anticipatory activities geared towards meaningful action in the present. Imaginary and pragmatic actions are geared towards shaping future paths and possibilities for longer-term sustainable resilience, survival and, ultimately, ecological, economic, political, cultural, societal and systemic flourishing. These are massive matters that are way larger than design schools’ attempts and hopes to develop pedagogies and research supporting survivable futures in which design contributes to the substantively subjunctive.

We try to tackle ways to address what Marenko (2021b) has further called ‘stacking complexities’. She argues that in response we need to develop adaptive, hybrid literacies, ones that as FUEL4DESIGN embodies, draw on capacities of western and other process philosophy. The project opened out to such matters and knowledge resources and practices and suggests in the closing chapter to Volume 1, entitled **Otherwising Futures Design Learning**, that this is a matter of designing not just ‘otherwise’ but a mode of plural shaping through diversity, and difference, of a designerly ‘otherwising’.

Encountering uncertainty, changing contexts and emerging needs

Design education is the most commonly shared domain in design universities. It spans practice and pedagogy, yet as a specialist research field it is not often explicitly framed. While design educational activities are indeed central to much of our research, be they on, in and through design, inquiry into design education is one of the less developed and coordinated domains of design. However, in the past decade this has been changing, as evidenced by, for example, the LEARN X DESIGN conferences, the global network and related conferences hosted by CUMULUS, the world’s largest design education organisation as well as two special issues of the journal *She Ji*. Design education research has also materialised through doctoral summer schools and cross PhD programmes and events. In the past decade in particular, design education has appeared within a slew of books, such as from Bloomsbury and Valiz in Europe, or, for example, *Educating Citizen Designers in South Africa* (Costandius & Botes, 2018).

Design education forms the content and the matter of debate. It is the central substance of pedagogical pursuits in workshops and conference sessions in a diversity of design domains. Further, as design methods and analyses move beyond the boundaries of design universities and partners, design education is expanding into other knowledge domains and practices. It has appeared in related publications on climate and environment, ecologies and sustainability, posthumanism and sociotechnical imaginaries, to mention a few.

These developments indicate that design education is clearly on the move (see Mareis & Paim, 2021). For many design universities, though, design education is what we do, pragmatically and pedagogically. Too often, one might argue, the creative and critical energies we spend as teachers and students in activities of learning, are under-communicated in more formal, shared and edgily emergent discourses of transformation. These are large educational and fundamentally unavoidable political questions for design educators and students of design (e.g. Mazé, 2019).

Importantly, engaging with them needs to take place where what lies ahead is no longer singular, planned, predictive or fixed but rather plural, multiple, varied and emergent futures (e.g. Gidley, 2017). Such futures are anticipatory in their stance in terms of making situated meaning that is concerned to shape futures head of the present, yet to see how imaginaries and projections might usefully impact back on the present, thereby powering additional futures moves, as it were.

In the context of education and futures more broadly, Ross (2023: 200) asserts that ‘... the futures we make through speculative methods and pedagogies may be partial, messy and provisional, but they matter.’ In educational terms, as Amsler and Facer (2017) remind us, in shaping literacies and pedagogies for and through design there is a need to work with open, not repressive, regimes of anticipation. The future is contested and constructed and our design futures literacies need to look to this from within and beyond design.

On Design Futures Literacies

Shaping futures by design

Design Futures Literacies have Design at their front and centre but also on and over their horizons (see also a summary in the Front Matters to this Volume). This refers to ways design generates analytical and practical knowledge and expertise through acts of creative, critical making for responsible and ethical long-term futures. Placing Design at the centre and at the forefront accentuates that futures literacies are made by making, that they are shaped and enacted through reflexive pedagogies.

These are pedagogies that are shaped through practices of construction and composition embedded in learning contexts that are agile and adaptive in their critical and communicative character. These pedagogies and their related literacies are realised by students, teachers, designers and design researchers [\[→ SEE FEATURE 2\]](#).

Design Futures Literacies accentuate that acts of learning and researching by design are key for design students and teachers and researchers. Knowledge and related practices of working with emergence and knowing as becoming ask that we explore and critically examine our engagement in shaping design's futures, pedagogically and via research, and professionally and societally.

In linking Design teaching, learning and inquiry it is possible to position Design Futures Literacies as an addition to views on both futures and literacies. It allows us to stretch beyond frameworks and practices of addressing futures through Futures Studies and Foresight work. It does so by shifting the focus to design as both making knowledge and making knowledge through design. This contrasts with perspectives in futures and Foresight that have legacies in strategic, managerial and decision-making views determined by given models and modes of confirmatory validation.

Design Futures Literacies, then, engage productively with shaping futures by design; they augment advances in education about learning beyond classrooms and within students' personal, public and, increasingly, mediated lives. They are realised through students' and teachers' engagement with process transformation in, through and as learning. This includes un/learning, re-learning and learning anew, democratically and in a mode of anticipation (Kuijer, 2020), as much as learning given perspective and approaches.

Design multi-literacies and plural futures

Design Futures Literacies, look to not one future but to many futures (e.g. Mignolo, 2011; Noel, 2022). We address literacies as expressed by designers and designer-researchers through multiple modes of making and knowing. These are not understood in terms of literacy as a set of deliverables, but a mix of ways of shaping futures where design programme, studios, projects and research are connected with partners and communities, interest groups and policy in multiple modes of making and knowing.

This is illustrated by student projects accessible via our project website from the work package DESIGN FUTURES SCOUTING from our ELISAVA partner, led by Oscar Tomico. As part of this course-based experimentation, students were asked to develop self-reflexive activations on working with positionality, boundaries and networks. As this part of the project website mentions, the key focus was on students creating awareness 'on the contexts and scales they are inhabiting and their positionality in them' when developing a First Person Perspective (1PP; Desjardins, et al., 2021).

This raises matters of processes, of learning by doing, of engagement in matters of current and long-term concern, and of roles in participative and unfolding inquiry, that take place via dialogue, and through building related and related modes of assessment and critique. These views are positioned to support learners with principles and ethics of care and responsibility. As with the four-partner project, we aimed to build emergent experiences and communities of practice through which to support respect, inclusivity and difference as values and aspirations for anticipatory design pedagogies. An additional aim was to offer our ventures and experiments to a wider community as

The Design More-than-human Futures Lexicon

EXTRACT FROM: RENDERS section DESIGN FUTURES LEXICON.
Available: [Link](#)

BY Bastien Kerspern

In a few years from now...

The Design Futures Lexicon has evolved to help in designing more-than-human futures. The Design Futures Lexicon has become a hybrid collection of elements of 'language' from humans, animals and plants. The Design

Futures Lexicon articulates these 'terms' as a way to mitigate the design of anthropo-centred futures, to integrate the 'voices' of other species in the experience of building visions, as an act of mediation of non-human perspectives.

This new Lexicon merges pieces of human and non-human for communications or interactions between same species members, members of other species, and the environment. It goes beyond words and definitions to help in sharing non-human perceptions of the world and its making, with sounds, simulation, smells, videos. While constantly struggling with its own anthropomorphism, the Design More-Than-Human Futures Lexicon emphasises on terms for interconnections and interdependencies between humans and non-humans in the global ecosystem, as well as in space and time.

FUTURES BRANCH-CASTING KIT / SCENARIO: THE ADVERSARIAL DESIGN FUTURES LEXICON

FUEL4 DESIGN+ MODULES BLOG ABOUT

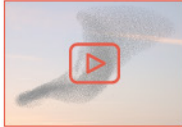
A LEXICON TO DESIGN MORE-THAN-HUMAN FUTURES

Words, languages and acts of communication to design futures escaping anthro-centred perspectives.


MORE-THAN-HUMAN LEXICON (A-Z)

MURMURATION

- Also called flocking, when a large group of bird flies together and change direction together, intuitively and coordinated.
- An aggregation of thousands or hundreds units adopting a collective behaviour, with any physical contact or vocal interaction.
- A visually harmonised ballet based on three simple rules: separation, alignment and cohesion to create complex and adaptative motions.



A VIDEO COLLECTION OF MURMURATIONS



A VR SIMULATION ABOUT EVOLVING IN A MURMURATION

PART OF THE FOLLOWING THEMES AND UNITS

1.3. EMBRACING FUTURES COMPLEXITIES

2.1. MORE-THAN-HUMAN LANGUAGE TO DESIGN INTERSPECIES CARE

3.4. RESILIENCE BY DESIGN

RELATED ACTIVITY


BLENDING AGILE

An activity about murmuration and interdependencies when facing futures shocks.

As a lesson learned from the Covid-19 crisis, we can speculate about switching on and switching off forms of physical, economic or/and social distancing when a species is endangering another. As disconnecting seems impossible, we have to envisage blending agile.

This activity invites to play with murmuration to repurpose spaces, products and interactions to create a continuity, with harmony and without contact.

Imagine design fictions and speculative futures embodying possible or preferable services, spaces or products embodying this notion of blending agile, inspired by murmuration.

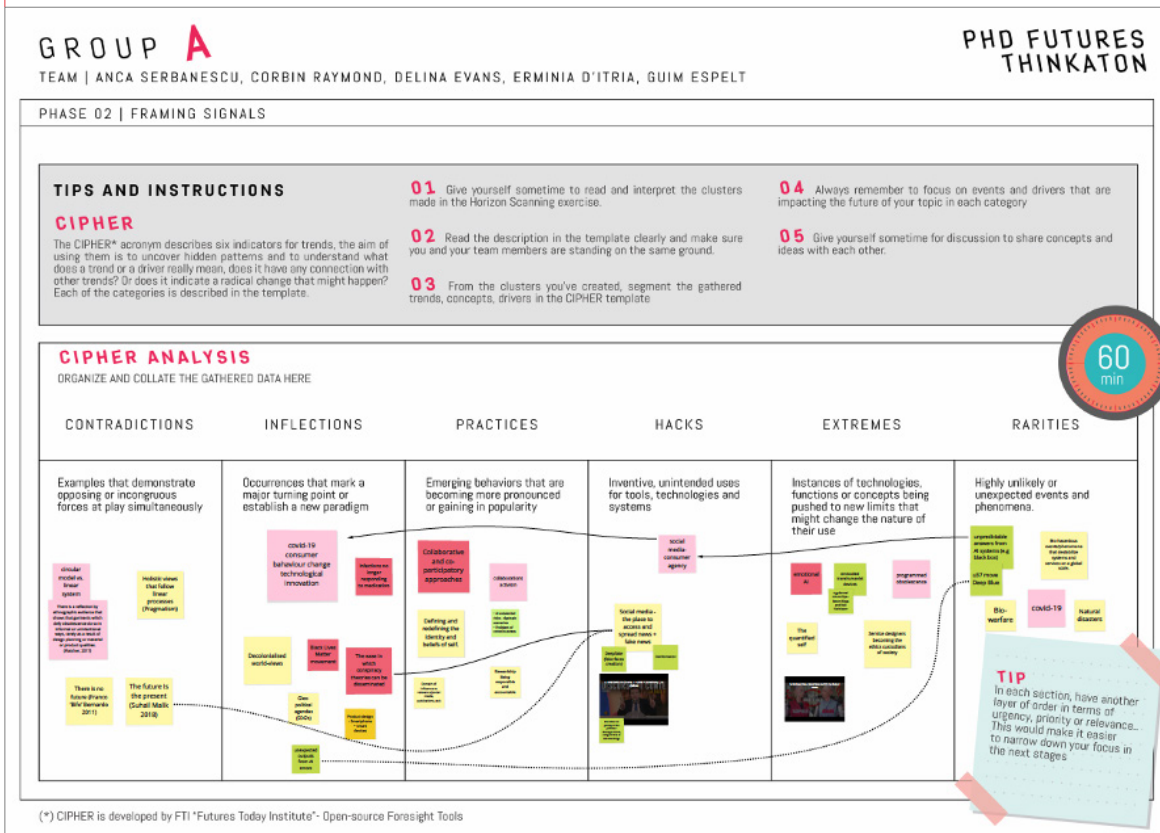


edgy, risky and hopefully applicable non-representational examples of what might be followed up and done differently in other contexts.

Expanding design literacies

In these settings and processes of transformation, along with their limits and legacies, our approaches to design skills, competencies, capacities, literacies and learning are also challenged. Already situated as working with multiple materials and materialities, multimodal articulation and communicative multiliteracies (e.g. Morrison, 2010), design literacies continue to be realised in relation to the purpose of task and intended audiences.

Here, participatory, dynamic processes are fundamental to shaping shared futures. Venturing into an anticipatory mode of making, learning, analysing and knowing means also acknowledging to a further degree, both the speculative and the pragmatic.



◀ **Figure 6**
An online Miro board session with a PhD group working with one of the tools selected from futures and foresight studies and turned towards design; IO4 FUEL4DESIGN. (Image credit: PoliMI).

Doing so via design means engaging with innovation in the field of Futures Studies while also exploring and positioning more specific design centred approaches, tools, processes and practices [Figure 6]. This entails not only following given stances, such as 'ecoliteracy' (e.g. Kahn, 2010) but also thinking, innovating and reflecting transversally (following Guattari), vertically and horizontally, in and through emergent, unknown, imaginary and real life, challenging anticipatory design pedagogies.

Toward relational anticipatory design pedagogies

In summary, we present a set of linked and related experiences and endeavours rather than specific trajectories or blueprints, which together form a relational rhizomatic

assemblage of potential, located in a specifically stressful and challenging period of human history. *Design Futures Literacies* offers what we hope are some paths onwards to different and more sustainable and long-term design education.

This is a design education that draws on centuries old Socratic and contemporary dialogical techniques (mauretic) that shift between the physical and virtual. It is located in a mode of transformation (metonia) and it aspires to design teaching and learning and research futures that in our view can only be infused with radical hope (hooks, 2003) which is 'directed toward a future goodness that transcends the current ability to understand what it is' (Lear, 2006: Kindle).

A relational anticipatory design approach to futures literacies and pedagogies is one that we have explored and experienced as being open to processes of becoming and being. These are realised in creatively critical, recursive acts of situating dynamic, collaborative dimensions of transformative learning together.

This requires a rethinking of curricula that, overfilled with intentions and content, needs to be reconfigured to make space and time for designing and finding means to teach and learn differently, as futures are both foundational and pro-formatively open to experimentation, exposure and elaboration. Design education - in the form of Master's courses and projects, and lengthier doctoral design theses that typically staddle and toggle between practice and analysis - needs to address the many contextual challenges of our times.

These challenges include developing and applying nimble and durable pedagogical and design-research methods and practices that reach beyond the constraints and demands of the present and work vigorously and imaginatively back into their ongoing and anticipatory situated transformation.

Such enactments may be strongly pragmatic and directed towards alternate presents; it may also be speculative and propositional in offering scaffolds for rethinking assumptions. In so doing, we may reframe givens and suggest potential scenarios for approximating or reconfiguring difference and dynamic, risky or even adversarial processes that erupt, challenge, emerge and strengthen over time (von Busch, 2022).

Pedagogies for long-term sustainable design futures

These tensions and changing needs have contributed to a design education where students experience uncertainty and are being asked to engage in processes of deep, systemic and even radical change in the ways in which we re-frame design relationally (e.g. Gravett, 2023) and go about its enactment.

Central to this is a fundamental need to work within and towards long-term sustainable and ecological futures (e.g. Maldonado, 2019; Boehnert, 2021). Further, we must learn how to anticipate needed adaptations and redirections as complex relations of context, conditions and change as they unfold, and continue to do so, and understand just how compounded and interlinked these aspects are (Chapman, 2021).

These matters demand that design education moves away from working with its assumptions and given values towards developing alternative, anticipatory design (Zamenopoulos & Alexiou, 2007), and, by extension, anticipatory design pedagogies (Morrison et al., 2021a). Furthermore, it necessitates an unlearning (Briggs, 2021) of that which limits, misdirects and reinforces, the very approaches that have led us into dire day-to-day situations, from mass migration (both economic and political) to resistance to weaning our dependence on fossil fuels as the window for introducing any lasting, effective halting of rising global temperatures, rapidly closes.

Our colleagues in FUEL4DESIGN from Politecnico di Milano argue that in the context of the Anthropocene there is a need for awareness with action (Celi & Colombi, 2019). This is needed if we are to support our students, enact our own pedagogies and perform our research in this epoch of human-generated systemic environmental change, now a 'hyperobject' (Morton, 2013) operating beyond our steerage and in need of our committed stewardship to avert ecological extinction. In a world that is environmentally and geopolitically precarious, seemingly saturated with uncertainty and indeterminacy, how we work with futures in design education demands that we engage in a different pedagogies of transformation than the one(s) so far largely enacted.

In the contexts of climate change and the global pandemic, design has been hoisted centre stage: it has been jettisoned out from its industrial underpinnings. It has been propelled right into working out and with matters of embodied knowing and being in bio-human systems, public health and newly crafted vaccines. At the same time, this is occurring alongside a deep denialism and multiplying conspiracy theories in increasingly polarised societies, both economically and ideationally (e.g. Bratton, 2022).

At the same time, we have experienced heightened awareness of the systemic relations (Sevaldson, 2022) between design and global and local living, work and business, creativity and change. We negotiate change and engage in working towards critical constructive transformation geared towards long-term sustainable futures.

Design Futures Literacies in two volumes

From a digital pivot to positioning pivotal mattering

For the final work package in FUEL4DESIGN, we originally aimed to make what we called a 'Manual'. This was intended to draw together the experiments and experiences of working with anticipatory views, content and methods in exploring design futures literacies. As a physical book, the resulting Design Futures Manual was to be developed as a means of positioning and integrating a diversity of pedagogical and participative activities across the project. Further, its digital open access format and distribution would highlight further exploratory offerings and situated and shared reflections for a wider higher education design community. This would differ from existing publications on futures literacy emerging largely from Futures Studies (e.g. Miller, 2018; Poli, 2021).

The focus of our publication, in contrast to rather than in opposition to, existing work in futures, would be on communicating activity-based ventures into design-centred

learning, including futures and literacies, and the roles of futures in design education. The audience was primarily intended to be master's and doctoral students as well as design educators and design researchers.

While the audience of the original outcome has not been altered, the COVID-19 global pandemic and the 'digital pivot' the project were forced to make in response, in a sense reversed the planned and anticipated developmental, productive and reflective dynamics of the project. In needing to rapidly and response-ably generate online learning resources and processes to support student learning and our project's core intentions and motivations, much of the work of the project was communicated online and digitally.

This included actual new learning resources and contexts of use that drew on what was planned but saw that morphed into digital resources for individual and group access, depending on need, interests and time. The resources also came to include additional material in support of learning and a spread of activities, inside courses, as courses, one-off workshops, PhD summer schools and a range of public events. Similarly, such designed key events and get together had to be radically redesigned, documented and mediated. Here the notion of 'literacy-as-event' is fruitful (Burnett & Merchant, 2020).

In effect, we completed many of the key project deliverables and that these together already formed an online 'manual' of sorts. This digital manual, scalable to screens, took form as an online assembly of the project topics, resources, events and outcomes. They were made available and communicated as open access resources.

The proposed manual was largely developed, trialled and communicated online and we needed to reconfigure what the final work package would cover. In response, we began composing a single, collaboratively developed and articulated book as a mix of overviews, situated accounts and possible views and methods for reflecting on futures in design education.

However, we found that arranging the content of the book in two volumes would enable us to more clearly address the more pedagogical as well as the more research-oriented audiences. Further, given the seriousness of the context and issues and the generative nature of the project, we produced material for two volumes.

Accordingly, the first volume centres on framing, realising and reflecting on futures education literacies in design education. The second volume takes up themes and problematics, means and methods raised in the project and in the book. The format we have chosen for this is the extended essay. Here, wider research contextualisation and analysis are presented, along with openings and discussions for further work.

These contributions are also informed by collective publications contributed to international design journals, conference and research events (Raymond, et al., 2019, Morrison, et al., 2019; Morrison, et al., 2020; Morrison, et al., 2021a; Morrison, et al., 2021b; Morrison, et al., 2022).

Learning and un/learning on the move

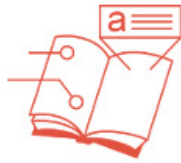
In both volumes, we have discussed and co-written material and drawn on the dialogues and queries raised in our various events. In many respects, we have not only been learning on the move but also learning how to ‘un/learn’ at a time when social distancing and movement have been severely restricted and when many issues have arisen about what to un/learn in assumed frameworks and norms, methods and practices in design education. These matters and processes are covered in Volume 1, Part II in which we present and reflect on our partner contributions in the project’s work packages (called Intellectual Outputs in the funder’s terms).

DESIGN FUTURES MODULES

DESIGN FUTURES LEXICON

This Lexicon builds a bottom-up shared vocabulary to assist, learning, teaching and research into design futures literacies and the role of design in shaping futures.

DISCOVER THE LEXICON



FUTURE PHILOSOPHICAL PILLS

The Philosophical Pills produce critical lenses through which to look at the numerous possible futures and ways to face them in design and through related pedagogies.

GO TO THE FUTURE PHILOSOPHICAL PILLS



DESIGN FUTURES SCOUTING

By Scouting, we develop a design futures literacies process model to generate and frame possible, plural and multidisciplinary futures in terms of scenarios situated in the world.

GO TO THE FUTURES SCOUTING



FUTURES DESIGN TOOLKIT

The Toolkit gathers tools to tinker in anticipatory ways with futures through design practice, along with the development of new tools within design, and to links to those outside it.

SEE THE TOOLKIT



FUTURES LITERACY METHODS

Transforming and conveying learning outcomes into processes is central to these Methods for futurist designers, as are links with design studios and speculative/theoretical courses.

SEE THE LITERACY METHODS



DESIGN FUTURES MANUAL

This Manual assembles and shares the development and generation of interlinked elements of the project and its productive relations to wider design futures literacies communities.

DISCOVER THE MANUAL



◀ **Figure 7**
Overview
of Design
Futures
Modules.
[Link ↗](#)

In Volume 1 we have also drawn on a range of necessarily (though not originally planned) online events that were developed in the project; these are covered in more detail in the contributions labelled **Design Education Reconsidered** as well as in **Otherwise Futures Design Learning**. The content and discussions from the various events have also contributed to the eight essays in Volume 2.

Through these volumes and the companion website that underpins them [Figure 7], we hope that our shared ventures into design futures literacies are more fully accessible to our own students, project members and institutions and event participants. This combination of modes of communication we hope will be further accessed by other design universities, through global design education organisations, such as CUMULUS, via higher education ministries and policy-makers, professionals as well as higher education and research venues outside of design schools.

Outline of Volume 1: *Practices & Prospects*

Resources not blueprints

Design Futures Literacies Volume 1: Practices & Prospects is made up of four main parts whose titles - Situating, Elaborating, Reflecting and Anticipating - point to the dynamic, emergent and generative ethos and action-centred nature of the project. These characteristics and content, together with related situated practices of making and knowing, have been directed towards learning together as teachers and students, designers and learners, professionals and researchers.

As a whole, they have been ‘composed’ to convey the changing, challenging and characterful nature of engaging with dynamics between futures and design from a primarily design and design education view.

This first volume offers readers ways to hopefully parse our design futures literacies ventures and to offer some measure of motivation and support in related pedagogical activities and practices. Volume 1 may be read in any order, and it may be read in conjunction and in selective connections with the long form essays that comprise Volume 2. In mentioning this we wish to encourage readers to approach these books as resources and experiments, not blueprints or prescriptions. Students and educators alike, ought to follow needs and interests and to traverse what is in essence a rhizomatic structure or relations and recursive themes.

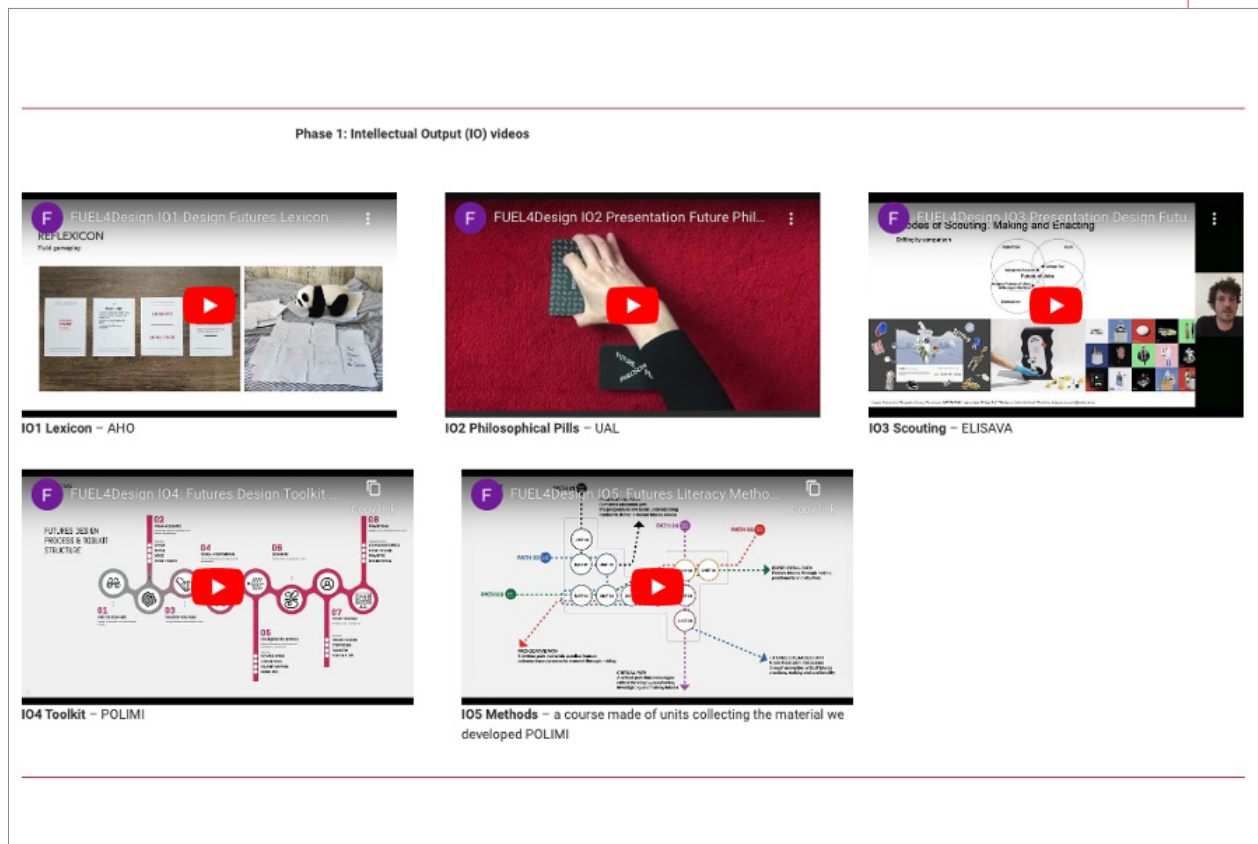


Figure 8 ►
Intellectual Output
event videos
from 'Building
Pedagogical
Futures in the
Present'. [Link ►](#)

PART I – SITUATING

Part I is about situating the wider field of design education. In this opening contribution the focus is on the legacies and positions on the futures of design education. The chapter is a long-form orientation and summary of a volume of especially recent engagements and publications. This body of work is offered as one of our contributions to the growing domain of design education which despite key venues such as the LEARN X DESIGN conference is difficult to grasp and has few publications in comparison with the volumes of pragmatic and analytic outputs in other design domains.

In this partial state-of-the art, we have attempted to assemble an array of perspectives and publications and to share these as a resource for both anchoring matters and letting loose some of the moorings, whether inherited or assumed. As with such summarial writing, we urge readers to seek out the original cited references and to continue to contribute their own inquiries into design education. However, we invite colleagues to consider what it might mean in their own settings and with their own students and domain specialisation and transdisciplinary pursuits, to look into and experiment with ways futures may be used within and through the literacies and pedagogies of design education.

PART II – ELABORATING

Part II is entitled ELABORATING. Here we provide overviews of the specific of the work package components that structured the project and are presented in the companion website under 'Design Futures Modules'. In this section elaborating also refers to post-component development of learning resources and practices in the life of the work packages. It includes the further positioning, mediation and reflection of work carried out. Readers are encouraged to access these overviews either ahead of or after visiting the related parts of the project website.

Central to Part II is a summary presentation and a situated positioning of the perspectives, methods and enactment of the work packages. Each of these 'elaborations', written after the completion of the work packages, is taken up in the final chapter in Part III and in the essays in Volume 2. The work packages are summarised as::

ARTICULATING – IO1: DESIGN FUTURES LEXICON

The Lexicon builds a bottom-up shared vocabulary to assist learning, teaching and research into design futures literacies and the role of design in shaping futures.

POSITIONING – IO2: FUTURES PHILOSOPHICAL PILLS

The Philosophical Pills produce critical lenses through which we look at the numerous possible futures and ways to face them in design and through related pedagogies.

VENTURING – IO3: DESIGN FUTURES SCOUTING

By Scouting we develop a design futures literacies process model to generate and frame possible, plural and multidisciplinary futures via scenarios situated in the world.

SHAPING – I04: FUTURES DESIGN TOOLKIT

The Toolkit gathers tools to tinker in anticipatory ways with futures through design practice, along with the development of new tools within design, and links to those outside it.

ENACTING – I05: FUTURES LITERACY METHODS

Transforming and conveying learning outcomes into processes is central to these Methods for futurist designers, as are links with design studios and speculative and theoretical concerns.



Figure 9 ►
Hybrid complexities and layered meaning making. Learning with the FUTURE PHILOSOPHICAL PILLS in hybrid mode. Image credit, UAL.

REFLECTING – I06: DESIGN FUTURES MANUAL

This Manual assembles and shares the development and generation of interlinked project elements and relations for wider design futures literacies communities. The first five of these work packages are also presented in a set of video overviews (Figure 11) on the project website.

These videos offer audiences both orientations and elaboration on the project key elements as well as an opportunity to process them as a whole. The videos were developed as part of our closing event entitled 'Building Pedagogical Futures in the Present' [Figure 8].

Readers are invited to also access the 'Events' section of the website in which project components are taken up thematically in shared presentations by the project teams together with talks and dialogues including invited experts and participants. The events provide diverse, dynamic modes of communicating and sharing what was carried out and views by project teams regarding their own pedagogical ventures and reflections.



◀ **Figure 10**
Back in face-to-face
teaching mode,
2022, UAL (Image
credit: UAL).

We suggest readers might like to watch these videos ahead of reading the thematic essays in the next main section. As with much of the material presented, these elaborations are part of the rhizomatic structure and rhetoric of the project and can be accessed according to preference in order, topic or type of mediation. One of our main concerns has been to make the project available and that these and other elaborations in context [Figures 9 & 10] are also resources for students and other educators and researchers, and those interested in *Design Futures Literacies* from outside design.

PART III – ANTICIPATING

Labelled ANTICIPATING, in PART III we include two chapters that look upwards, onwards and back into our pasts as well as critically into alternate presents and potential, actionable futures.

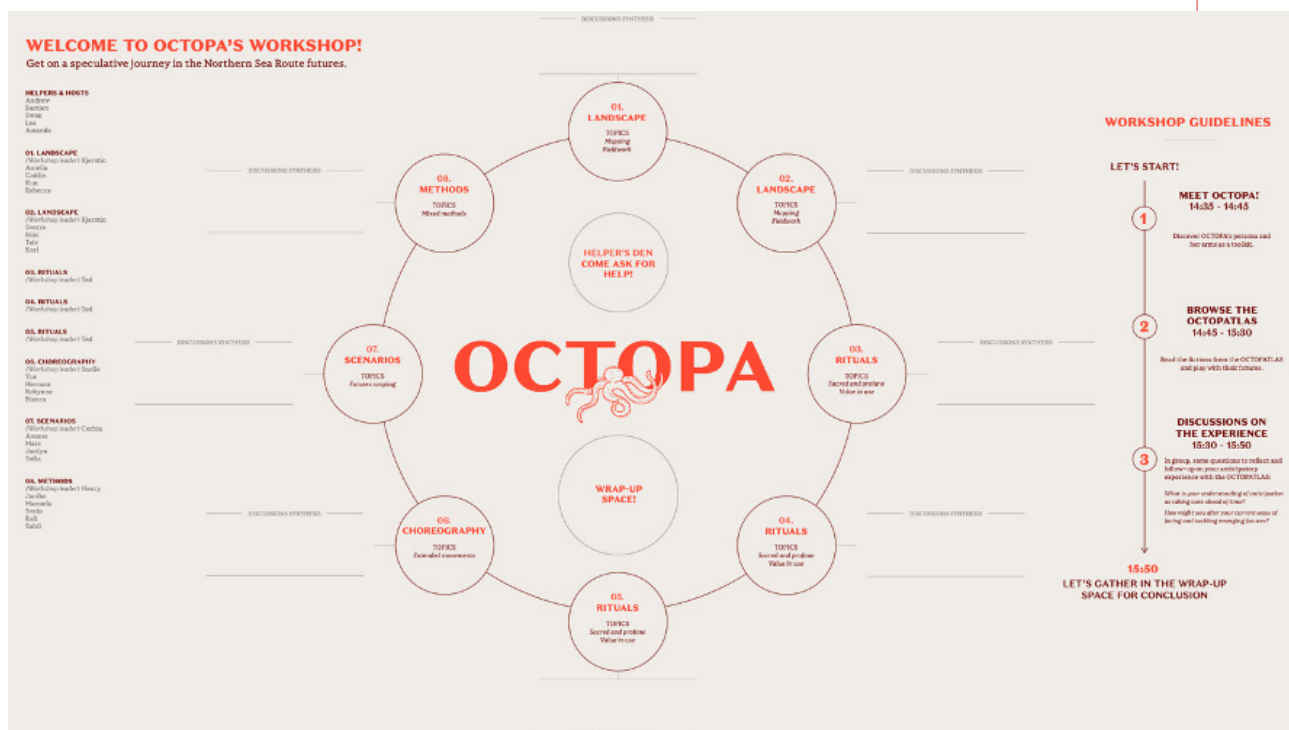
In *Design Education Reconsidered* we take to key issues raised in earlier chapters and elaborate on them in terms of a transformative perspective and related practices in unpacking and reorienting literacies, learning, design and futures. We see design futures literacies 'as being plural, dynamic, procedural, performative and affective. Procedurally, they concern formal and technical skills. Performatively, they are realised via contextual, cultural and communicative competencies. In terms of affect, they encompass awareness, empathy, and engagement and anticipation.' In this elaboration of futures in design learning and design futures as learning we draw on a range of disciplinary domains outside of design, with focus on work in educational sciences. This is linked with illustrations from work carried out in FUEL4DESIGN together with references to our own recent research publications. Overall, we approach design education as being emboldened and working in an anticipatory mode when it acknowledges risk and emergence, social imaginaries and unknowns along with 'care-full', creative-critical, negotiative pragmatics of plural, collective and individual practice (e.g. Puig de Bellacasa, 2017). Together these design futures literacies enact and allow us to work with a range of materialities, participation and articulations of purpose, voice and

engagement [Figure 11]. They seek not to work in a predictive future proofing stance in learning how to know but of becoming knowers together about changing worlds and world making through shaping futures by design.

The final chapter is Volume 1 is entitled Otherwising Futures Design Learning. Here we take up recent interest and reflections on pluralistic perspectives and approaches to philosophy, learning, culture, subjectivity, agency, post-humanism, environment and most recently Artificial Intelligence (A.I.). The chapter engages with global perspectives on design education and design futures considering the crises around climate, environment, resources, geopolitics and sustainable planetary futures.

The aim of the chapter is to shift from the focus of design educational venturing and experimentation from within a European based and funded education project to wider reflections on decolonising design, matters of political economy and modes and potentials for anticipatory transformation through design for long-term sustainable futures. The text offers examples and some suggestions, new questions and open possibilities. We have only touched the surface of design futures in these two volumes and the project. Further matters presented in this chapter may be followed up in the thematic essays that comprise Volume 2. This again points to the rhizomatic, recursive and abductive logics and transversal rhetoric of these two publications.

Figure 11 ►
Screenshot of
interface and
programme
for distributed,
online OCTOPA's
WORKSHOP, drawing
on the DESIGN
FUTURES LEXICON
and futures
scenaio making.
(Image credit:
Bastien Kerspern,
Corbin Raymond &
Andrew Morrison).



Design educators, researchers, graduate students and professional and other knowledge partners may well find clearer paths and different distinctions and connections as they browse and read the material in informational and readerly pathways of their own anticipatory and pedagogical design interest and re-composition. We hope that this final chapter provides some new pathways and routes to travel differently than others seemingly known.

Outline of Volume 2: Essays & Reflections

Overview

In *Design Futures Literacies: Essays and Reflections (Volume 2)* we have assembled eight interrelated thematic essays that have been developed subsequent to the first five work packages. The essays are not intended as separate items but, rather, form a relational set of ventures and reflections. These reflections are linked with discussions and suggested implications of their potentials.

As each essay has a substantial introductory section outlining its core concerns and content, here we provide a brief summary and orientation to connections between them. These connections concern situating and reflecting on learning, making and working with design futures literacies in design education. Each essay contributes to the book's wider relational rhizomatic rhetoric. It does so by centring on what we see as a key theme that we envisage as providing design educators and researchers, as well as graduate students, with elaborations on re-framings of design futures literacies and related practices. In doing this we draw on a body of related research and practice, including examples from the project. Collaborative writing between project partners has been central to these essays, including co-authoring and individual features by PhD students who have taken part in many of our events and used our resources.

As a whole, these essays are further explorations of learning and working - indicative of the experiences of students, educators, researchers professionals outside of design - in troubled and trying times. In a variety of communication styles, these essays mark out some of our own entangled experiences as design educators who offer situated, speculative and pragmatic accounts of trying to stick with attention to learning as becoming and teaching as facilitating and supporting flourishing.

These include reflections on holding onto what at times have been shadowy notions of shared arrivals. We also try to openly present the liminal and the elusive together with the definite and the detailed in changing contexts of working and reflection have challenged our planned processes of drawing together our hopes and achievements along with lingering doubts and ongoing concerns. The essays are summarised as follows below.

Summary of contributions

In **Essay 1: Anticipatory Design Literacies** we outline a relational view of design and futures learning that seeks to take care 'ahead of time'. Connecting socio-technical design imaginaries with critical-creative pragmatic practice, we present a reframing of design and futures centred in anticipatory thinking and situated action. The motivation is to reach beyond the pressures and constraints of current crises to shaping together and exploratory design learning and knowing that is in the process, about becoming and oriented towards potential future actions for durable sustainability. Working with emergent design inflected and infused activities, explorations in materials and plural perspective son futures and learning through difference we suggest Design Futures Literacies are anticipatory at heart and dynamic modes of shaping shared tomorrows through creative contemporary risk taking, venturing and 'prospecting' potential means to transformation.

Essay 2: Altering Prospective Design Pedagogies extends the concerns of a relational anticipatory design framing to more systemic, infrastructural, institutional and contextual challenges and needs in an ongoing, needed and futures inflected view on design education. Acknowledging design histories and legacies (and their limits and need for recognition and reorientation), in this chapter we outline some of the situational aspects of the challenges to shaping a genuinely transformative design futures pedagogies and their related anticipatory design and not only futures-oriented literacies. The pandemic highlighted the notion of the literacy or learning event in ways in which our project needed to develop and adapt and reconfigure its plans and trajectories. In needing to more clearly acknowledge working with contingencies and uncertainties, the essay considers further our emergent experiences and shared and specific reflections, from blog posts to visualisations.

Central to the chapter is reflecting on learning in flux and the undeniability of pedagogies for post-normal times. These we address through a set of three interlinked tensions: 1) Immediacy-Durability, 2) Organisational Contexts – Civic Agendas, and 3) Experimentation-Articulation. We position these as a means to discussing, and motivate for wider transformations of design education where futures are contested and where projected futures may also lure and limit critical creativity. Wary of the logics and effects of neoliberal design/universities, the chapter proposes design future education needs to be reframed and to include unlearning, pragmatic returns from the speculative to actionable presents where students and teachers alike are clearer in their positions, identities, offerings and fluencies in working with futures in designing.

Essay 3: Sustainability, Systems and Learning Design Futures addresses the core matter of how it is we are to motivate, orient and facilitate futures in design to support to foster, foment and facilitate the systemic and long-term sustainability. In this essay we review approaches and literatures on both design and sustainability and Systems Oriented Design (SOD) to provide more substantial framing and positioning for design futures literacies and related pedagogies. In doing so extractivist, modernist profit-driven logics are exposed as undermining the foundations of planetary survival. In contrast, we include material from student work linked to the project together with related research publications. In doing so we have attempted to connect design sustainable imaginaries, systems and change. Informed by SOD and futures perspectives from Anticipation Studies, we argue for the elaboration of related cultural perspectives and articulations of systems-sustainability linkages and focus on tool development and applications. Key to the chapter is the further attention to the importance of futures design literacies and pedagogies to address matters of political economy. We critique a lack of underlying deep analysis in understanding and countering how design, complicit with the practices, pedagogies and policies that have led to our current and anthropocenic crises, might in reality work to support and ensure long-term systemic sustainability. To achieve this, we situate design futures education as needing to further links and activities between emergent anticipatory design cultures and sustainability-systems dynamics. Design Futures Literacies and their pedagogical and research practices and analyses are deeply embedded in notions of time and realised through temporal materialities.

In **Essay 4: Time, Design and Anticipatory Learning** we claim that further attention is needed to 'times in anticipatory perspectives', on and through design and its curricula and didactics, as well as research that is both practice-rich and future facing with the goal to inform rich, alternate presents. We support this through an extensive transdisciplinary review of literature and perspectives. We do so to orient futures in design education and design futures literacies and pedagogies as needing to work with and in time as a design material. This we accentuate in a focus on scenarios and anticipatory design learning, with highlights from doctoral work. The temporal is also presented as polychronotopical, with diverse cultural, historical and disciplinary demarcations, whether in a decolonising frame by way of post-humanist positioning. Overall, we also argue that our design schools need to make time to find ways to work differently with time in design futures curricula, pedagogies and students' learning processes and outcomes. Earlier machinic and managerial notions of time and control need to be de-linked from linear, for-profit approaches originating in industrial design and repositioned and activated in the contexts of temporal materialities under pressure but being reconfigured to work towards ecological, systemic, long-term durable futures that escape short-term human satisfaction and self-destructive consumerism.

The core concern of **Essay 5: Care, Engagement and Design Futures Knowing** is that of drawing together developments in design and design education where 'taking care ahead of time' situates modes of futures ethical knowing and shaping futures. The chapter was written against the backdrop of earlier teaching and research on care, change and community and the expansion of care in the domain of Service Design in particular. However, work-related futures, 'home-based care' and the teaching and learning of care-full Service Design were challenged in the context of the COVID-19 global pandemic. In this context, the inventiveness of design is outlined by Rodgers, Galdon and Bremner (2020a) in their documentation about products and devices developed by designers, companies, persons and organisations. They argue that in this outpouring care supplanted capital. However, it has become brutally clear that the inequalities in responses and provision of resources led to citizens experiencing the pandemic very differently. In this essay, we face such challenges and design futures ethical matters by drawing on feminist theorists and practitioners of care to situate the need for ethical practices in working with design futures and ways in which design may benefit in its futuring.

Furthermore, we touch directly upon the dynamics and policies towards providing home-based care and its domestication. We recognise that there is a need to support students in their contextual awareness while ensuring our own practices and pedagogies maintain ethical relational recursivity and flexibility in 'taking care of futures'. We close the chapter with an outline of what might be developed further as 'an anticipatory ethics of future care by design beyond short-term solutions and towards response-able long-term sustainability and survival. To achieve the stances and intentions that are at the heart of educational transformation, it is crucial that the engagement and enactment by participants to learning, teaching, research and partnerships are valued and built into developmental design futures.

Entitled **Agency, Enactment and Design Futures Literacies**, in **Essay 6** the focus turns matters of positioning and facilitating students' own agentic learning in an anticipatory view. Such a view provides support for processes of adaptation and transformation where students, and their teachers, increasingly work within wider societal, environmental and commercial contexts of transformation. Key to such negotiated design futures infused learning is knowing how to work between the conceptual and the actual to form the imaginary into the pragmatically sustainable. Here, we follow up on earlier work on design learning-based ecologies and further locate them in the contexts of climate and systems change that is itself transitional, emergent, raising new issues and needs in its transpositions to longer-term sustainability. Where learners' action and agency are central, so too is supporting and guiding expectations to seeing how student projects might depart from safe harbours and open out to new routes and rhythms of anticipatory designing.

Drawing on literatures and studies from the learning sciences, too rarely incorporated with design education and futures in design pedagogy, we motivate for an anticipatory design education that shifts beyond only skills and competencies, much as these are essential to the future crafting we are seeking to realise, towards adding futures shaping, via narrative, media, scenarios, prototypes and the like. This may involve disruption, hacking and the proposing of alternate scenarios – by students in briefs and course modules and orientations. In this way, it is possible to highlight contradictions and tensions and work towards supporting the landing of differently leaning, alternate present thinking and potentially realise different futures.

Essay 7: Learning Design by Making Futures concentrates on a variety of ways of approaching design learning through making activities and reflections about methodologies and methods. Approaching these as part of a design-futures developmental processes, we acknowledge the importance of ways design's histories and legacies as well as emerging and future scripting practices impact on the futures we shape and convey. The essay includes student work that shows ways they develop their own compasses in positioning first person and directed work and in learning how to relate it in collaboration with others. Also included is reference to research and pedagogically related matters around design futures and Research through Design, counter-framings and un/designing assumed views and positions in working to develop awareness and fluency in design anticipatory methodologies and methods. This extends to scenarios as one key component in shaping futures in and through design in working with spaces and materials, online, narrative, physical, hybrid, etc.

Working with critical and speculative design and their implications for informing other approaches and tools, as catalysts for critical, playful and imaginative responses to complex and entangled presents is covered. So too is recognition of design histories and their reach and importance in shaping futures but also their constraints and assumptions as design teacher and student alike continue to query the promotion and positioning of futures in the design located anticipatory pedagogies and project productions and communication.

Essay 8: Tools, Means and Mediating Design Futures Education, as the title suggests, goes into relations of making and shaping design futures and communicating them through a diversity of means. In short, placing these in a mode of meta-design that is iterative and recursive, inventive and inclusive, situated and participative, the essay elaborates on how learning anticipatory design needs to work with entanglement, abductive methods and the materialisation of new knowledge and its exchanges that are themselves realised in processes of becoming in the world, imaginary and tangible. We focus on design tools and toolkits and discuss the need to deconstruct and debunk assumptions that toolkits simply contain solutions sets. The essay shifts to two detailed research linked aspects, the first on metaphor and anticipatory design learning and the second on the uses of cards that has been extensive in the project. Here metaphors we may anticipate and the role of serious and embodied play, are taken up. Following on from illustrative cases in these two areas, the essay closes with presentation and reflection on meta-design and its roles in positioning methodological and methods reconfigurations and new tools generation in shaping sustainable futures by design that is realised in learning together.

Learning through design futuring

From plural futures, actionable design presents...

In these two books we suggest alternatives to and, above all, a span of what we see as design-centred agendas, along with views and experiences of some of the ways we might work towards better identifying these. Further, we look into ways we might devise meaningful and actionable design located futures literacies that reach beyond some of the paradoxes of received wisdom and accredited practices. We do not have definitive answers to these continuing needs and challenges.

However, design education is a growing domain of inquiry, as we indicate in our contribution entitled *Design Education Reconsidered*. Numerous design educators and design researchers are engaged in investigating ways design education may be revitalised and repositioned to address complex, systemic change and design-centred ways of coming to know what we need to know and how we might design this and activate it pedagogically and strategically. Valtonen (2016: 536), in the context of reflecting on participatory innovation in the redesign of aspects of two Nordic design universities, offers us a challenge to our poly-disciplinary and uniquely critical-creative design institutions that is still pertinent today:

As these prototypes of new educational approaches are now appearing in the design community around the world, the broader challenge is the same as with design research in general; how do we ensure that the new knowledge and insight gained through these prototypes, are cumulated in a larger body of knowledge and shared within our academic realm? Examples in many countries have involved countless hours of hard work – as design researchers we need to build on this knowledge and develop our fields further. Can we change culture and content on a large scale and cherish new approaches rather than view them as interesting exceptions?

... to shaping futures through design education

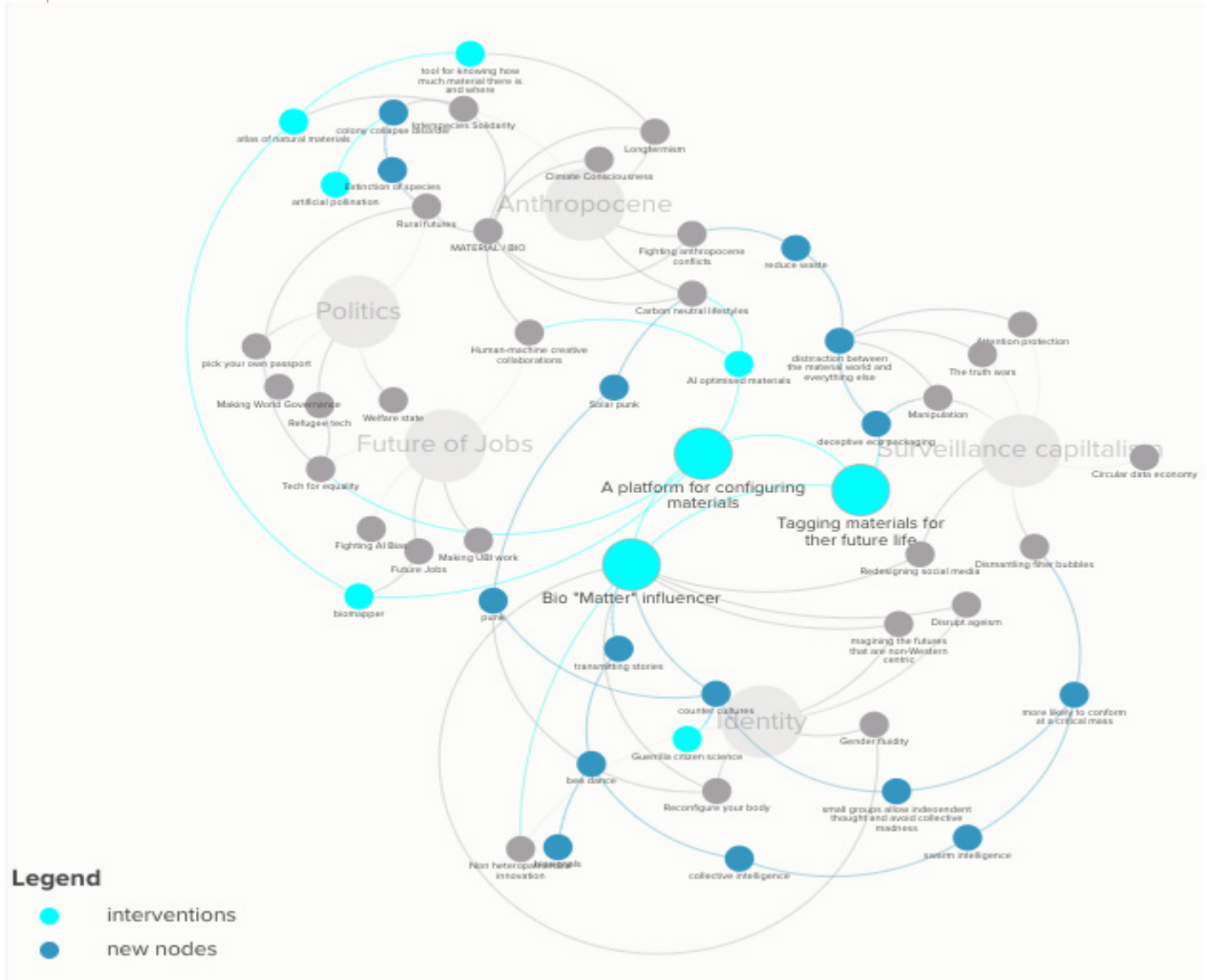
Higher education institutions not only encounter but are embedded in a world permeated by systemic uncertainty and fundamental contextual challenges to the very ways in which we conceptualise, facilitate and enact learning and teaching, and wider societal exchanges of research knowledge. Barad (2017), for example, reminds us that such 'troubling times' and apparent 'ecologies of nothingness' demand our active commitment to acts of re-turning, remembering and facing the seemingly incalculable. Students, teachers and researchers work with complex conditions and demanding forces in changing contexts of considerable duress, but also their potential.

The world over, universities find it difficult to craft substantive, dynamic and durative responses to these challenges. Whether individually, institutionally or professionally, higher education is undergoing immense stress-testing. While we have worked in well-resourced European universities, elsewhere globally students struggle with issues of access to the means of higher education, such as access to online platforms and tools during the pandemic digital pivot (e.g. Ivancheva, et al. 2020). Challenged are its fundamental knowledge foundations and formations and the ways we go about re-shaping and exchanging them as we grapple with how to literally craft response-able approaches and shared activities for shorter and longer-term planetary survival in the wider context of climate change.

Design futures literacies are central to the ongoing and as-yet-to-be realised potential of design schools to meet emergent and unknown demands and opportunities. In connecting futures and design as two key domains in which knowledge shaping and sharing may be both built and analysed, altered, promoted, offered and critiqued, we may be able to look beyond immediate restrictions and instead to spaces for possible interventions, such as in **IO3: DESIGN FUTURES SCOUTING** and the Atlas of Weak Signals work [Figure 13]. To do so demands that we unpack and unlearn assumptions and practices that constrain and curtail our own educational design agency as students and teachers, professionals and researchers of design. Without respectful and critical knowledge of our design and cultural legacies, and those that have been relegated to the shadows by design complicity with techno-driven linear growth models, policies and practices, we will not be able to look through the activity of the present to perceive and propose alternative, possible and preferable futures. As Ross (2023: 13), writing on digital futures education writes:

... a speculative approach works with the future as a space of uncertainty and uses that uncertainty creatively in the present. Working in a critical or questioning way with digital education futures requires methods that can bring particular ideas or issues into focus by envisioning or crafting conditions which may not yet currently exist, working to trouble established imaginaries.

By definition, the future is always beyond grasp. Yet in 2023, precarity prevails in the still unfolding consequences of a global pandemic and the consequences of changing geopolitics and material and ideological contests. Simultaneously, environmental and climate challenges deepen and threaten the weakest of our global citizens, in the short



◀ **Figure 12**
Dynamic visualisation of a class exercise 2 finding intervention opportunities (in light blue) and key-works chosen by the students (in dark blue) in the intersection of the five major groups of weak signals (in light grey) and their associated weak signals (dark grey). Master's in Design for Emergent Futures (ELISAVA, IAAC). (Image credit: ELISAVA).

Figure 13 ►
A photo
compilation from
Master's on DESIGN
FOR EMERGENT
FUTURES that
illustrates the lab
life of the master's
programme,
ranging
from biology
experiments,
material samples
development,
digital fabrication,
and building
interactive
installations.
(Image credit: Fab
Lab Barcelona).



term already brutally felt in the form of ‘extreme events’ (Broska, et al., 2020) such as droughts and floods, and in the longer, systemic term in polar ice melting and rising sea and temperature levels. Design and design education cannot but engage in what it is to make and shape products and services, interactions and systems relations in such an ever-changing world [Figure 13].

Needed are bold, ‘care-full(l)’, critical and constructive design imaginaries that can be translated and transformed into actionable, more equitable presents in which hope and long-term sustainable futures prevail. Hope and wonder (Schinkel, 2020) are needed to engage design students and teachers further in design processes that reach for systemic transformations and social and equitable futures via the socio-material and socio-imaginary critical practices of and as design learning (e.g. Bozalek, et al., 2018).

Design education is in our view a key site in making such actions material and for working with multiple materialities in shaping futures together in our studios, courses and field studies, akin to dialogues between design and anthropology (e.g. Akama, et al., 2018). Design futures literacies are themselves in motion. They entail emergent skills and competencies, situated experiments and modes of exploratory knowledge shaping. Through related activities, students and teachers may increasingly share their learning lives and trajectories more fully with and between one another. This offers us some means to marking out designerly ways of knowing that are futural, yet located in pragmatic activity that generates possibilities and resources for others to further shape long-term sustainability and ultimately, planetary and multispecies flourishing.

Design futures literacies will continue to need to be made, explored and exercised through designerly activity in contexts of use and application. Participation and engagement will drive their maturation and continued processes of shaping paths to knowing, and provide a bedrock for lifelong learning. Supporting students' design futures literacies must fuel critical imaginaries that, playfully and innovatively, offer more than what may be in the near-field of a demanding present. Ultimately, they will provide ways to realising alternative, actual and motivating different futures by design.

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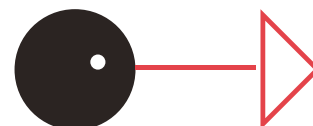
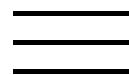
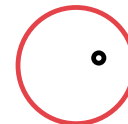
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PART I.
SITUATING

**ON DESIGN
EDUCATION**

BY Andrew Morrison, Bruce Snaddon, Manuela Celi,
Oscar Tomico & Betti Marenko

WITH Yue Zou





Orienteering

Introduction

As Heape (2015) reminds us, today's students are tomorrow's practitioners (and, we add, future researchers and researchers of futures). For Design this poses a number of important educational challenges and possibilities. From an Indian context, Majithia (2017) sees a need to transform the role of the designer and the preparation of young professionals for futures that are volatile and ambiguous. These are some of the issues we take up in this book and especially in this essay in which we reconsider the legacies, practices, pedagogies and prospects of design education in collaboratively shaping design futures literacies. We address them from two interconnected perspectives: *futures views on design education*, and *futures views in design education*. In addressing these in this essay, we explore a number of questions that are also implicated in the essays that follow:

What are the published discourses on design education futures?

How do futures of design education frame, influence and steer perspectives and practices on transforming design education?

What re-framings of design and futures design education is emerging and how might we better understand and work with them actively, plurally critically in supporting 'anticipatory design pedagogies'?

How might we look onwards into implications of such an anticipatory design education as a resource for action in our present contexts and long-term reach of design teaching and learning?

Dean (2016) writes that all boundaries in design are designed and are design. She counters arguments that design has been dissipated in its expansion and specialisation and offers six points in 'a schematic outline to uncover how boundaries among design fields emerge, what they do, and how they behave.' (Dean, 2016: 21–23). These items demarcate that boundaries erupt from within, are extrapolated, are provisional, evolve from shared principles and correlate horizontally. Dean further argues that four techniques may be seen to have contributed to the expansion of design and to its internal composition. These are designation (cancelling out difference to allow inclusion), emulation (where expansion generates by-products, such as services and

specialisations), infusion (reconditions existing position and modes) and migration (unfolds through the explosion of differences) (Dean, 2016: 24–26).

What about the boundaries and relations of design *education*? Much of the literature on design education is on ‘the future’ of design education. We refer to this literature in this essay as an important context for understanding historical, contemporary, emergent and prospective aspects of design education that is itself always changing. However, we work from this literature towards a view of situating futures perspectives, methods and activities in and within design education. By this we mean an anticipatory and relational view on design literacies and pedagogies (**Essay 1: Anticipatory Design Literacies**).

This chapter, then, is also about framing spaces and potential for situating futures in design education. To do this we have tried to surface and offer a set of readings of design education, historiographically and with reference to contemporary matters (Davis, 2017). This has been done to expose some of the more hidden, implicit perspectives and practices in pedagogies of design together with an orientation to an expanding discourse on learning and design. The former may well be known and familiar. The latter may not be quite where readers have spent their designerly conference hours or concentrated journal reading. Concerning futures, we introduce some key aspects in this chapter and take them up in further detail in the essays in Part III.

We offer this assemblage of views and publications to link design and literacies, practice and pedagogies, research and reflections, that is historically, currently and as a form of transdisciplinary relational conceptualising design education for the challenges of 21st century contexts and conditions. These are the settings for the ventures of FUE4DESIGN and within and from which we propose ways of engaging with futures views and methods in working to shape what we arrive at in the title of this book *Design Futures Literacies* and the related term we adopt being *Anticipatory Design Pedagogies* that we expand on in Volume 2 in **Essay 2: Altering Prospective Design Pedagogies**. De Smet and Jansens (2016: 2763):

... suggest that developing the anticipative mode of thinking and acting in a design context can meaningfully contribute to future-oriented research and can complement the prediction-oriented mode of thinking in the sciences. In this context, anticipative acts aim at dealing with shape-shifting aspects of reality. Design and design research then offer a fertile context to enrich and strengthen anticipative competences and actions that enable us to access, embrace and navigate through that which is fuzzy, slippery and changing. In such fuzzy conditions, anticipating the ‘to-come’ or the ‘not-yet’ is considerably depending on the strength of imagination as the mode of thinking that can deal with the gaps in the explicitly known and with latent and hidden aspects. The imaginative mind departs from a different attention to the world, one that is able to construct a dialogue with the unknown and hence, enables to learn from the future, and to anticipate on different grounds than prognosis.

In our view...

In summary, our view in FUEL4DESIGN has been to work with and towards better positioning of what we see as a hyphenated, that is interlinked, view on relations and practices, making and analysing of teaching and learning in an anticipatory orientation in changing the future of design education. *Design-Futures-Literacies*. This is not a linear hyphenation, but a web of relations. These relations are themselves multiple, plural and multimodal: in their approaches and understanding of contexts, environments, ecologies, cultures, agency, actors, participation, affect, experience, materials, technologies, infrastructures, mediations, making and articulations. This view is elaborated in essays in Part III of this book entitled *Reflecting*. The essays are designed to be read as individual or sequential chapters just as they may be read in conjunction with and flipping between items and sections, Part II of the book and the orientations to the project's main components and to the project website for direct access to its details and resources. The essays may thus also be read transversally. This essay has the following main sections: The Reach of Multiple Legacies; Weaves of Design Education; The Promise of Futures; On Literacies and Design; Orienting Design-Futures-Literacies; Shaping Design-Futures-Literacies; and a Conclusion.

The Reaches of Multiple Legacies

By Andrew Morrison, Manuela Celi & Oscar Tomico

Reaching beyond a central paradox in design education

Design education, so essential to the core of Design schools and to the contribution of designers to society, contains a central and rather under-discussed paradox. It is this:

While design pedagogy saturates design universities and much of their daily organisational and institutional character and activities, design education is perhaps one of the less formally framed areas of research and analysis.

This paradox has an important bearing on how design futures literacies may be framed, enacted and understood. The wording is not to say that in our daily work that we do not devise and enact reflexive criticality on our pedagogies and the content and partners we include in our teaching. The practice of design, our design practices, and our students' emerging experience in practising design are fundamental to what makes design and what design embodies in a myriad of ways in the world. Design practice anchors creativity in the dynamics of activities of designing that work with materials, participants and ecologies in shaping artifacts, processes, experiences and outcomes. Such practice is in effect a plurality of practices (Vaughan, 2017). These are rich, diverse and vibrant pragmatic, conceptual and imaginary 'performances'. They are increasingly entwined with design research, and simultaneously further shaped in contexts and situations of use and re-use [Figure 1].



◀ **Figure 1**
The reach of multiple legacies and prospective, playful re-patterning. Use of 'Atlas of Weak Signals' physical kit (Master's in Design for Emergent Futures (ELISAVA; IAAC). IO3 DESIGN FUTURES SCOUTING (Image credit: Fab Lab Barcelona).

Design education has long been a hugely active part of design schools (Romans, 2005; Hickman, 2008, Tovey, 2015a) and is always in transition, whatever is driving change processes and directions. Yet design education as a field is one of the less formally framed and perhaps seldom followed domains of design research compared with others. Paradoxically, critical analyses of design education, linking not alienating relations between practice and theory, offer design educators shared reflections about practice, through practice and for the practice of design pedagogies.

Such interplays, one could argue, are in fact a lively part of the day-to-day educational dynamics of our design schools and our relations with external partners and their inputs to our teaching and learning programmes and activities. But how are we to venture into making and understanding the shaping of design futures literacies if communication and dialogue on expert knowledge – from practice and theory and between them – within our own institutions and associates about design education is also not understood as to the world views that are being promoted? Are these seemingly sacrosanct? Are fleetings, trends, or are difficult if needed alternatives to ossified modes of teaching and values they reinscribe to occupy a core role?

This essay, in response, points towards how aspects of design education's own disciplinarity or historiographies may operate and may be reframed on three counts: a) how they may influence the world views we summon and circulate, b) their impact on syllabus and curricula design, and c) influences on the types of design futures we may develop and offer as responses to current challenges and anticipatory designing for preferable futures. This 're-review' briefly points to aspects of modernist European design education that have provided many key foundations but also assumptions about contemporary design pedagogies. It shifts to an outline of publications on current concerns with reference to recent works and offers these as part of a dialogue

on rethinking some of their assumptions and presumptions and relations to design literacies (see also Bravo, et al., 2022). This leads to an opening out of reconceptualising design futures literacies with reference to international shifts in design to encompass, for example, decolonial and gendered views, post-human and ecological perspectives, and needed redirection of studies to matters of sustainability and systems.

In doing this, the core goal is to reveal and to invite discussion around some of the matters in working with design and futures and ways FUEL4DESIGN has encountered, created and perhaps escaped and worked through them. Mazé (2019: 3) reminds us that criticality is important to understanding design education practice, and highlights the growing significance of feminist perspectives amongst others, arguing that:

One role of critical theory is to examine everyday life, to ask how particular norms, hegemonies, and in/exclusions are constructed and (re)produced. Practices of critical historiography ask such questions of the past, and critical futures studies interrogate the future. Further, feminist critical modalities explicitly explore how things could be otherwise. Taken into practice, theory is not neutral in questioning, in naming and framing, it may destabilise how things were before and open new possibilities for thought and action. Now is a time for such criticality in design education, for identifying what could and should be different, for aspiring and acting toward our preferred future.

In the sections that follow, we provide a select review of approaches to design education and to the development of perspectives and practices on literacies, from the learning sciences, media and communication studies, cultural and futures studies, as well as design.

Before embarking on this in detail in Section 3 'Weaves of Design Education', we make two detours into developments that impact on current approaches to venturing into shaping futures in design education and inquiry. The first concerns the re-branding and re-positioning of the Bauhaus as a specifically European design innovative, creative movement and ideology that has driven design schools in an original modernist paradigm. This is now being shifted to meet challenges and changing demands of complex societies, systems, work and learning. The second development concerns the growth of Futures Studies, with its legacies of forecasting and foresight that are to some degree in the past decade have been morphing into anticipatory perspectives and the emergence of a more plural notion of futures literacy.

The Bauhaus realigned

20th-century design schools, with foundations in the European Bauhaus (Cross, 1983; Davis 2017) were typically concerned with the new, the novel, with innovation and with the future as 'progress'. In such a modernist view, futurism itself is understood to have been 'invented' (Poggi, 2009). Such progress was typified by speed and direction, with the newly marketed as offering more efficient and improved products, business and lifestyles.

The foundationalism of Bauhaus in design education (Warmburg, 2022) has been resurrected in the name in two programmes of different scales. They indicate that it has considerable reach. The first formulation was proposed by Ehn at Malmö University in Sweden entitled the 'Digital Bauhaus' and was central to the multisite government funded Interactive Institute across Sweden (Ehn, 1998). The 'Digital Bauhaus' added user participation and the democratic aspects of Scandinavian design to the original studio culture, and emerging 'moral goods' (McDonald & Michela, 2019) that was then enacted around and through digital media, technologies and participatory design practices. The centennial conference Impact! From Bauhaus to IKEA in 2019 ([Link ↗](#)) is indicative of how design universities and practices are re-interpreting the Bauhaus as regards changing contexts of 21st century design education.

The second, a recent 'platform' approach championed by the E.U, is labelled *New European Bauhaus (NEB)* ([Link ↗](#)). At its heart is a drive to work towards preparedness by design that to a fair measure is still located in design as problem solving and underpinned by smart city techno-determinist logics, infrastructuring as a method and a lack of critical reflexive sociocultural takes on re-generation, greening and circular economies. There would seem to be a disconnect from many of the developments in recent and contemporary design education with which we have engaged and covered in this book.

One hopes there is room for further dialogue and design didactics that seek deeper transformations. Given our experience in FUEL4DESIGN in the pandemic and its looser hold in 2022 onwards, we suggest it is worthwhile to examine what has occurred more systematically across the continent of Europe and beyond as well as to refashion the premises of a futures facing and engaged global design education. The rest of this chapter assembles some of that material and the ones that follow offer options for further discussion. First, though we take a second detour into Futures Studies and the emergence of futures literacy. These two impact on both relations of design as a primary maker and shaper of futures and of a need to clarify futures and literacies relations in developing a more specifically design inflected view on anticipatory learning (see Volume 2, [Essay 1: Anticipatory Design Literacies](#)).

Futures Studies, anticipation and futures literacy

Foresight and Futures Studies developed in the context of the Cold War (Andersson, 2018) and were characterised by demands for geopolitical and strategic dominance, and championed by organisations such as the RAND Corporation in the U.S., at a time when nations and peoples of the Global South were seizing and activating their own political independence. Central underlying world views were ones of planned strategic management and developmental solution-based technologies in which an all too binary future world would be directed by the global superpowers and their state ideologies.

Where economic growth, consumerism and global trade grew, forecasting was a key method, while foresight, centred more on contextual participative approaches took longer to surface and develop and to depart from cybernetic and techno-determinist world views and policies around the future. As the globe began to develop a variety

of associations and axes, from the Non-Aligned movement to more liberal democratic institutions centred on sustainability, social transformation and equity, foresight perspectives shifted to considering the future as multiple, complex and in emergence. However, approaches and applications of foresight such as in scenario planning, often did not address the underlying socio-economic models within which they were deployed. Strategic decision-making was thus central to foresight work in the 1970s and 1980s. Raven (2021: online) argues that ‘... we have been peddled a singular, monolithic future - a future of business-as-usual, both literally and figuratively - whose contradictions have become impossible to ignore.’ He sees futures are steered by a positivist methodology ensconced in business-as usual and militarism.

Driven by positivist, planning and deductive strategic logics, such a view had had major force in foresight and futures, especially in the U.S. (Curry, 2022). In one of few historiographic accounts of futures and scenarios, Curry (2022) presents these developments as being coopted and marketed by corporations, such as the fossil fuel Shell, and by futurists in whose interests it was best to not question the underlying contradictions of opening out scenario building in still largely predictive futures. However, he argues that a different tradition emerged in Europe, such as in the early post-WW II work of Fred Polak (1955/1973) in the Netherlands and Bertrand de Jouvenel establishing the consultancy *Futuribles* in France. He sees a trajectory of this work as leading to work in more preferable and multiple futures. Curry (2022: 77–78) generalises, ‘To (over)simplify, if the American approach tended to be driven by forecast models, game theory and probabilistic approaches, the European approach was framed by images and narratives.’

Along such lines Curry mentions the *Mankind 2000 Conference* held in Oslo, Norway, motivated by Johan Galtung and Robert Jungk, a marker of futuring that is centred on relations between possibilities, peace and power. He points out that the promise of this event was to go unheard and that it is only much more recently that its premises have been more fully taken up. Further, referring to the current century, he observes that ‘It is striking that the intellectual energy in the futures sector has shifted away from scenarios in the last 20 years. In the 1990s, all of the innovation, even excitement, in the world of futures practice and studies was around scenarios.’ (Curry, 2022: 99). In response to globalisation, matters of sustainability and environmentalism, as well as related issues concerning governance and policy, in the 1990s a shift occurred that was centred on increased participation and recognition of shared goals and stakeholder inputs and representation in foresight methods and uses.

In *The Foresight Principle: Cultural recovery in the 21st century*, for example, Slaughter (1995) argued that there was a critical need for futures work to shift from considerations of experience informing senses and practices on futures to seeing foresight as offering schematics and means to shifting activities and outcomes to a wider cultural and not only technocratic or phenomenological realms. This was extended in a comprehensive set of publications that sought to establish knowledge frames for such a shift (Slaughter, 1996) that was extended into seeing foresight as a means to distracting from dystopian views in shaping futures (Slaughter, 2003). Central too was demarcation of what comprises Futures Studies as it continued to emerge as

a multi- and trans-disciplinary field and a span of related futures oriented research journals, such as *Futures*, *World Futures*, *Journal of Futures Studies*, *Foresight*, *World Futures Review* and the *European Journal of Futures Research*.

Some of the utopian, technocratic and popular cultural views on futures from the 1970s were placed in dialogue with alternative research and education centred ones, such as the work developed by Dator (2009) in the 'Mānoa School' in Hawa'i. Sardar (2010: 182–184), in a much debated text, asserted four laws for Futures Studies that are: 1) wicked, (complex, un-disciplinary too); 2) MAD (Mutually Assured Diversity); 3) sceptical (plural and contingent), and, 4) futureless (knowable only in the present). Similarly, Dator et al. (2015: 135) re-framed their earlier 'Laws for the Future' as that:

- 1. 'The future' cannot be predicted because 'the future' does not exist.*
- 2. Any useful idea about the futures should appear to be ridiculous.*
- 3. Futures are not history in reverse.*

They contextualised these as follows (Dator, et al., 2015: 136):

... futures studies, at least from the Mānoa School perspective, is a profoundly political enterprise – one that confronts the forces driving the future down familiar as well as perhaps unwelcome paths. This dynamic is not partial only to the Mānoa School. Indeed, the origin of contemporary futures studies owes much to the apocalyptic tensions of the Cold War that led many people to think that perhaps there would be no future at all. As well as whether the ideas, institutions, technologies, and cultures that led to the Cold War were the best that humanity could do. Surely, many said, if we open dialog about preferred futures to everyone in the world, and not keep it the preserve only of certain groups in certain cultures, we might be able to create a better future than we had obtained from the past.

Futures studies, then, is as much about critiquing and perhaps disengaging certain images of the future from coming to pass as it is about imagining, crafting, and enabling preferred futures.

Two overviews of the foundational work of Slaughter and Dator provide further contextual and detailed cases (see Slaughter, 2021; Dator, 2019) as does a new edition *The Knowledge Base of Futures Studies 2020* (Slaughter & Hines, 2020) that as with much foresight and futures work centres on methods and tools (see e.g. Inayatullah, et al. 2022) and change and participation, such as on scenarios. Curry (2022: 101) writes though that 'It is hard not to conclude, as environmental conditions become increasingly turbulent, social values become more informal and organisations continue to experiment with being less hierarchical, that scenario planning will be displaced by more critical futures techniques.' In all of this work design is apparent but rarely discussed, not in reference to its burgeoning international research. It is in this regard that *Design and Futures* (Candy & Potter, 2019) is such a key collection.

Working for better, emergent, complex and plural futures has surfaced as a key crossover form foresight, education, design and a host of trans-disciplinary practitioners and researchers, such as in anticipatory governance. Miller has championed futures literacy as a mode of developing awareness and preparedness for changing and emerging futures (Miller 2007, 2018), and links this with the formation of Anticipation Systems (e.g. Rosen, 1985; Nadin, 2015; Poli, 2017); Anticipation Studies (e.g. the Anticipation and Futures Studies series from Routledge edited by Keri Facer and Johan Siebers) seek to connect the systemic and the socio-cultural, environmental, educational and technological.

As presented below, we reach beyond this notion of futures literacy, akin in a sense to inoculatory approaches to media and digital literacies, fuelled by critical theory and pedagogies post-World War II and in the rise of situated literacies and learning in the 1980s and 1990s, especially in the English-speaking academy. We do so by referring to literacies as plural, multimodal, transcultural, and specifically design multiliteracies.

Futures Studies and their pedagogies have also received increased attention, ranging from the work of Kauffman (1976) in *Teaching the Future* as needing to meet complex and emergent demands to futures education that is responsive to contextual conditions and dynamics (e.g. Gidley, 2012, Gidley, 2016). Gidley (2012) surveys educational futures as an evolutionary activity that has shifted ontologically in its 'mega-trends of the mind' in terms of socio-cultural, political and educational phases. In referring to moves to 21st century education, Gidley (2012: 49–50) characterises three waves.

The first wave concerns weak signals as from the early 20th century, the second as 'alternative' education arrived at by the 1970s, and third wave approaches to do with rich imaginaries of educational futures for the 21st century. In looking ahead, she writes that:

... to identify and cohere what Nicolescu calls the 'luxuriance of the plural' when it comes to futures-oriented educational approaches. By bringing them into relationship with each other, we enable a unitas multiplex of postformal-integral-planetary approaches that can learn from each other, inspire each other and give strength to each other. This is what evolutionary pedagogies mean to me. (Gidley, 2012: 51).

Pedagogies for futures are also shifting in relation to world views (e.g. Cingel Bodinet, 2016) and matters of futures and organisational learning (e.g. Selmer-Anderssen & Karlsen, 2016). More specifically, Candy and Potter (2019) compiled a wide array of views, methods and cases in *Design and Futures* to which we refer below.

In terms of anticipation, Poli (2021) has recently argued for a range of thematics in need of further attention to meet the challenges of futures literacy, including attention to culture. However, design as a creative productive art in its own right, and its increasing transdisciplinarity in research terms and volume of publications, do not feature significantly.

Missing is acknowledgement of design as a mode of making and knowing that is creative and critical, in part constructionist, and, yet, ontologically risky. Design is today often articulated by ways of its now assured perspectives and methods of shaping knowing through experimentation, materials and cultural investigations, innovation with critique. It is underpinned by a body of often collaboratively infused research that affirms it is not a modernist, functionalist problem solving polytechnical pursuit but a deeply important and dynamic plural domain in which practice and pedagogy intersect with experimental and experimental futures shaping by design.



◀ **Figure 2**
FUTURE PHILOSOPHICAL PILLS. Deep in collage-making. Collage is a highly generative, hands-on activity that channels visions, hopes and fears about futures via chance and collaboration. The 'Hacking Futures – Futures Hacking' Philosophical Pills workshop at Central Saint Martins, UAL, 7 February 2020. (Image Credit: James Bryant).

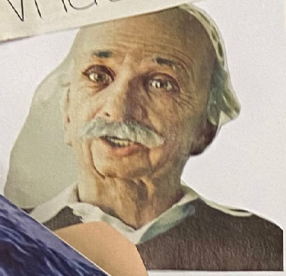
Figure 3 ▶
FUTURE PHILOSOPHICAL PILLS, Group collage detail. Participants were asked to comment on and respond to each other's work. The 'Hacking Futures – Futures Hacking' Philosophical Pills workshop at Central Saint Martins, UAL, 7 February 2020. (Image Credit: James Bryant).

This is also about the making of ontologies by learning 'productively' in and over time. This can be seen in the examples shown from our UAL partner in FUEL4DESIGN with the FUTURE PHILOSOPHICAL PILLS being taken up in collaborative collage activities with Master's students in early 2020 and extended to bachelor-level classes in 2023 [Figures 2 & 3].

Design education plays an under-acknowledged role in these developments and through its multiple modes of working by design educators committed to facing emerging challenges and finding new ways of working with industry, STEM partners and policy and governance concerns. Design futures literacies and their related pedagogies therefore need clearer and stronger accounts and consolidated arguments about their intents and achievements.

Just as foresight and futures specialists and practitioners asserted their takes on making futures, design too needs to mark out and fill in and to foment and further its own multi- and trans-disciplinary mode of making and knowing. To that end, along with many others in design schools the world over, we are engaged in realising together wider design pedagogical and design practice-inquiry shaping of an ongoing *Anticipatory Design Education*.

What are you worth?
NOW



know
new people.
(network).

Life Long Learning
Survivalist



IMPROVING
DRIVING FOR
NEURO DIVERGENT



No Borders

Learn how to share
resources more &
contrast between
developed + underdeveloped
countries

Building an
equal society

"Almost every
has an opposite
less wise, to
George Santayana

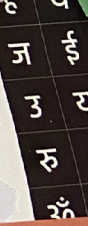
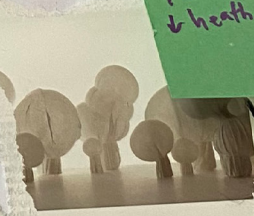
Better work / school
life balance /
adaptability.
↑ Survival rate
↓ health problems

Less
work with
Nature

DESIGN FOR
THE BASE OF THE
HEALTHCARE PYRAMID



Self-learning
skill.



Towards Anticipatory Design Education

Our work ventures into ontologies and epistemologies, pedagogies and mediations of design futures literacies have sought to build connections, acknowledge difference and facilitate processes of problem finding and problem re-framing while offering teachers and students tools, spaces, events and pathways towards articulating their own design located futures literacies and pedagogies and shared and collaboratively shaped ones. In doing so, we have needed to activate our **PILLS** and exercise our **LEXICON**, open out our **SCOUTING** and pave ways to critically and creatively explore our **TOOLKIT** and **METHODS**.

In each of these activities, and in their relational, speculative and pragmatic interplays, we have needed to work with and against many givens and assumptions in design education. We have needed to acknowledge that some of these 'knowns' contribute toward approaches and means that work against the times and trials within which we find ourselves in the present, but also in the longer run. We see a need to look further into these aspects and to remain creatively critical in relation to the positioning and marketing of the New European Bauhaus. This is taking place at the same time as European design schools engage with movements to decolonise design and to take up concerted transformative pedagogical actions for real-world challenges and needs.

One example illustrates this a meta-design matter. Boelen et al. (2018: 46) curated a reflection on design education at the *4th Istanbul Design Biennale* that sought to unflatten '... the pluriverse of potentials in design and learning, not only with multiple perspectives but also multiple propositions beyond design as solution and school as institution'. So, where Futures Studies has opened out to richer and more nuanced transdisciplinary inquiries, we see that design educators and researchers together, with their teams of designers and students, must themselves take up the challenge to expose design's historiographic legacies and constraining and generative pathways. At the same time, they need to continue to articulate their own professional and knowledge making as contributions to shaping futures by design in other ways.

Weaves of Design Education

By Andrew Morrison & Bruce Snaddon

Collaborative composition

We've written this section together as part of a decade of dialogue and collaboration between Cape Town and Oslo and our two different and intersecting design education and research practices. Our collaboration has also been influenced locally and internationally by a range of colleagues, events and institutions with whom we've been fortunate to meet and to learn from and, importantly, together with them. As two white, cis, middle-aged and privileged men from southern Africa with English as their first language, one gay and one straight, we have worked with design education and media, culture communication and technology as a chosen site for supporting change through learning in higher education. We've both worked to support learners' participation in building future professional and research careers. In our own situated pedagogies in South Africa and Zimbabwe, as well as in Norway, we have taken part in massive

educational change processes. These have included participating in wider and deep structural and decolonising institutional change strategies and activities enacted to redress historical inequities.

This has been realised in collaborative ventures into facilitating actionable aspirations of alternative, respectful and adaptive learner-centred futures. The latter have highlighted vast differences between the Global South and North through entanglements with the forces of digitisation and mediated online learning. These have extended to working pragmatically with issues of technical access, facilitating participative practices and supporting learner-generated content and pedagogies centred on developing and distributing design learning resources online (Snaddon et al., 2017). Together we see these initiatives and dynamics of teaching, learning and researching in design schools as very much about making and shaping wider specialist and public Anticipatory Design Literacies and Anticipatory Design Education [Figure 4].

In this section we gather and weave together aspects of underlying and emerging features and characteristics of design education. Our goal is not to offer an exhaustive, universal mapping. It is to try to arrive at some measure of an overview and an assemblage of components and exemplars so as to help further frame and re-frame design education. The intention here is so that we may pinpoint and position its legacies and components, directions and predominant characteristics as we move further into 21st-century design and our project's reach towards conceptualising and experimenting with design futures literacies and pedagogies.

Modernist foundations of 20th century design education

In 'What was the Bauhaus? And what can it teach us today?', Turner (2019: 39) notes that:

The Bauhaus was founded on the belief that the pleasure of art and technology, properly united, could defuse the tensions of politics and perhaps even replace them. But its struggles as an institution and the means of its demise tell us something different. They remind us that if we want to have the kind of society the Bauhaus fought for, not to mention the kind of beauty it brought into the world, we will need to embrace both the unity of art and technology and the agonistic struggles of democratic politics. (Turner, 2019: 39).

While this was in many respects true, it also masked underlying, colonial and imperial foundations in the rise of product and industrial design, as Anastassakis and Martins (2022) argue in the context of the establishment of 'German' inflected design schools in Brazil in the late 1950s onwards. Industrial design - and the domains that were later spawned through shifts to visual communication, interaction and technology, services and systems, to mention a few - were structured as part of wider linear and accumulative modes of knowing centred on expansionist growth and for-profit, capital driven logics (e.g. Schmelzer & Vansintjan, 2022). As part of apprentice-type training competencies for the practice of design, skills-centric and linear design curricula (Lerner, 2005) were central to studio-based pedagogies (e.g. Sawyer, 2017) and the preparation of learners' repertoires.



◀ **Figure 4**
Concluding phase on futures terms, PhD workshop using the tool BALUSION AHO, autumn, 2019. Teacher Andrew Morrison (right) discusses the importance of connecting terms to contexts, word views and relations of language and power in shaping futures design aspects of PhD projects. Photo: Palak Dudani). Available: [Link](#) ▶

As part of shifts from individualised craft to industrial design, with its features of mechanisation and mass production, 20th-century design schools were framed around procedures, practices and policies of planning, certainty and solutions (see e.g. Davis 2017 for a history of design education). Since the late 1960s design schools have increasingly developed relations between making and researching (e.g. Archer, 1979). Bonsiepe (2011: 51) describes design practice as now including ‘navigation design, event design, generative design, scenario design, invention design, experience design, user experience design, genetic design, humanitarian design, interaction design, interface design, emotional design, service design and social design to name a few’.

The studio has remained a constant in design pedagogy throughout its formal curriculum design since the Bauhaus. Fariás and Wilkie (2016) see it as corresponding site of variegated and distributed creative practice and inquiry for the social sciences, in contrast to the laboratory. The studio centres on materials and the creation of cultural artifacts through collaborative ecologies of practice (Michael, 2016; Stengers (2010). Key here is the disciplinary location and related communicative intention of designers in acts of making and social scientists focus on analysis.

In our view, in design futures literacies we do not separate making and analysing, nor do we see the studio, as much design education has tended to, as separate from a design-infused shared research practice. It is a venue and a means to shaping shared futures literacies, artifacts and processes, services and systemic epistemic knowledge. However, these have considerable room for more robust and disruptive use and power in design education. To secure and promote and upend this in a genuinely dynamic problematising design futures education we need to work locally and remotely - that is abductively and transversally - to better connect disciplinary design boundaries and avoid silo-thinking to not only conjure different futures in design but different futures through designing and related situated design practices and transdisciplinary design research. That said, we need to unpack the formations of design and disciplinarity and world views (see **FUTURE PHILOSOPHICAL PILLS**).

Still focused on the studio and applied inquiry, different design ‘disciplines’ have emerged as design has sought to claim legitimacy as a discipline in its own (self-constructing) right (e.g. Lloyd, 2019), thereby contributing to a multi-discipline with a diversity of relations to professional practice as well as to other academic domains (see also Antunes & Almendra, 2022). For Jani (2011) this has also extended to diversity in design being extended through non-western perspectives, where in terms of transformative design learning, that as Orr and Shreeve (2018: 26) put it, the focus is on ‘translating creative practice into pedagogic activities’.

Design education in flux

In the opening chapter to *Bauhaus Futures*, the design scholar Mazé observes that:

Now is a pivotal time – the centennial of the Bauhaus is an opportunity to reflect on legacies of the Bauhaus and blueprints for design education today. It’s a call to consider possible and, even, our preferred futures of design education. What do we want for the next 100 years, what do we want to be different, and how can we go about ‘building the future’? (Mazé, 2019: 3).

In a period of intense crises, from 2019–2022, FUEL4DESIGN has ventured - as have all design colleagues and students internationally - into digital-physical and collaborative experiments in confronting the immense and pressured challenges of working with a host of future-related issues that have been compounded in the present (Feature 1). Marenko (2021) has characterised these as a matter of stacking complexities that need to be addressed as hybrid literacies in the making. We have sought to critically and reflexively engage in acts of building design futures, influenced by the legacies and histories of design (Dilnott, 2015) impacting on the present. Mazé (2019: 4) writes that ‘In “building the future” the past and present are necessarily implicated. The future is not empty – it will be occupied by the legacies and consequences of preexisting worldviews, structures, institutions, policies, and practices.’ What then characterises such an occupation, that is as in terms of prevailing views and as keeping design education occupied? However, we have tried to go further and work with what has always been core in design education, namely the role of imaginaries, conceptual design and speculation, and to connect these with contemporary and longer term key issues of issues of sustainability, well-being and democracy [[→ SEE FEATURE 1](#)]. Our interest has been to add a plural futures view to the ongoing changing of design education, as Mazé warned us at our project’s closing online event ‘Building Pedagogical Futures in the Present’ ([Link](#)), to be cautious of ways in which futures are themselves colonised, including in our own work. How then has design education in the 21st century addressed matters of transformation to meet societal needs as well as to work critically and creatively? What does such a re-review of that work attempt to highlight and thereby expose as a challenge and invite us to respond to constructively and creatively? In FUEL4DESIGN, much of the time we have reached into design imaginaries for shaping alternate futures, and we have done so pragmatically and conceptually. This means we have also needed to work with changing content relations around core topics that have huge force in today’s world and its human and nonhuman dynamics. In a way, some might say, we have been engaged in a Design Futures Bauhaus.

Carbon, Lifestyles, Nature, Responsibilities

PoliMi PhD Project, 2022, Group 2

TEACHER: Manuela Celi.

STUDENTS: Adrien Delvaux, Chang Cheng, Clementine Hemici, Simone Piersigilli, Slate Werner, Zhou Zhou

Carbon Buddy and Retrospecial

A radical change in citizens' lifestyles was needed to monitor countries' carbon footprints. Carbon Buddy, a habit controlling device is mandatory to achieve the monitoring of people's carbon footprint in their everyday life. It is used in the hand and displays the user's behaviour in the participation of CO2 reduction, if the

performance is poor it may block the hand's movement and prevent certain actions. Facing the carbon crisis by harvesting one's sense of responsibility and commitment towards the environment is most effective in achieving change. Retrospecial is a portable handheld device that collects and reflects on memories and actions. This enables an interaction between human and the object being touched, opening a deeper understanding of the carbon footprint related to that object or action, and fostering right decisions.



Over two decades ago, in 'Rethinking design education for the 21st century', Findeli (2001) motivated support for understanding complex systems and for ways of acting within them. With interest in the relations between theoretical, methodological, and ethical matters, Findeli posed a number of issues that have continued to feature in conceptualisation and practices of design education in what has been termed '21st century literacies' (see below). In essence, as we later elaborate, Findeli's call to proactively develop curricula and the future profile of the profession have become central to motivations and enactments of change in the content and orientations of design learning. However, As Poggenpohl (2008) observes, this is also about a time for change in which we are integrating research and collaboration (Poggenpohl & Sato, 2009).

Approaches to design education in the early 21st century had already been seriously impacted by the rise of digitisation and the influence of Human Computer Interaction and techno-determinist approaches to technology. These were challenged through the growth of Participatory Design, Co-Design and User-Centred Design and saw the development of design curricula in which consultative, participative and enacted designs in progress were motivated through sketching, mock-ups and prototypes that were connected with ethnographic methods, stakeholder inputs and situated studies and revisions via use. In 'A dialogue on the future of design education' at the Change the Change Conference, Gornick and Grout (2008: 13) asserted that critical mass is needed in reshaping design education as 'Our society is in transition, new markets are emerging and the economy is finding new routes. We can and must be in the vanguard as proactive contributors, as this transition has much to offer designers. If we don't engage, our profession runs the risk of being further marginalised and irrelevant.' Assumed approaches on reflection in and on action drawn from Schön and widely applied, were discussed more critically, with Jones (2015) arguing space for an alternative view of 'reflection-on-reflection' for students to glean individual value. Work in design has been referred to as a means to inform pedagogies elsewhere, such as the design critique being discussed as a model for distributed learning (Hokanson, 2012) and, in the context of HCI, Ghajargar and Bardzell (2019) examine what design education reveals about design theory.

In his 'Models of design: Envisioning a future of design education', Friedman (2012) argues that, in light of changes in world economies and expanding demands on design from business, innovation and society, designers need domain-specific skills and technical ones for different domains as well as ones connected to thinking and knowing for different professional needs (Friedman, 2012: 143). These refer to domains of theory and inquiry, and with them analytical, planning, thinking and synthesising skills that may not all come from design, and to domains of practice and application, that are also connected to one located in ethics and care, amongst others (Friedman, 2012: 150). He further argues that design schools are not equipped to meet related challenges and 'require a foundation based on science and research'. While much of the literature refers to the undergraduate and Master's design curriculum, industry-facing pedagogies and situated studio practices (e.g. Mededith, 2017), doctoral design education has also grown internationally via PhD programmes and practice-based

inquiry (e.g. Vaughan, 2017a). Vaughan and Morrison (2014), spanning decades of individual and joint work in education, design, media, technology and learning between Australia, the U.K., southern Africa and the Nordic region, including Norway have reflected on models, approaches and materialisations of the design PhD.

Equally, research has emerged on modes of inquiry and educational practices in shaping doctoral learning as design inquiry (Tonkinwise, 2017) has seen the growth of young researchers whose trajectories have followed ones in design's disciplinary and transdisciplinary professionalism in research. Doctoral schools have also spanned regions and institutions such as in the NORDES one in the Nordic region ([Link ↗](#)) and the *Design Futures Thinkaton* (from PoliMi in FUEL4DESIGN).

At AH0, for example, a transdisciplinary project *DesDoc: Design Doctoral Education* ([Link ↗](#)) has traced the development of PhD education and students research projects and achievements. Taking this one setting as indicative of the expansion and specification of PhD design education, we see that dialogue has been presented as a mode of supervisory doctoral collaboration (Morrison, et al., 2015); the curriculum design of PhD design education has been mapped (Mainsah, et al., 2017), and relations between modes and genres of thesis production and genre are addressed (Morrison, 2013; 2017).

We now highlight one reflection on such endeavours and their practice based inquiries and mediational aspects, (Vaughan, 2017b), that positions much of the ethos of learning by doing, or toggling between practice and critical reflection that we have benefitted from being linked with in the NORDES design research community ([Link ↗](#)). Ehn and Ullmark (2017: 85–86) comment that:

A school of design research, a contemporary Bauhaus, ... cannot be reduced to 'conversational design', just as the early Bauhaus could not be reduced to creative meetings between art and technology. There is more at stake than interdisciplinary and designerly ways of working. Donald Schön, himself, in his later research (Schön 1994) acknowledged this challenge and suggested that design could play an important role in major social and political issues by providing implicated actors with a creative 'frame analysis' of their possibly contradictory basic assumptions and values. A further step has been taken by several of the PhD students that have participated in the Swedish design PhD school. They have not only analysed frameworks but engaged in co-design of alternative possible futures by hacking and re-framing the fashion system, by challenging market-oriented modes of product design through forming co-operatives, by suggesting modest but radical ways for design to engage in the global environmental crises far beyond the sustainability agenda, by vitalizing democracy through exploring new forms of public engagements – and so on. The repertoire of such controversial democratic design experiments (in microcosm), co-designed by educated reflective design researchers, should be at the core of emerging schools of design research and evolving networks of educated design researchers.

These reflections resonate strongly for us as we too seek to support and build doctoral design education and students' growth as designer-researchers working with cutting-

edge projects in futures and design. For a wide review of doctoral programmes, 'indeterminacy' and core curricular content, see Davis et al. (2023) and on the Swedish Doctoral Design Programme see Hellström Reimer and Mazé, (2023). Such approaches entail qualitative and situated non-normative approaches that are context-thick and not necessarily about science derived empiricist designs and research (Feast, 2022).

This current chapter thus has several items in the form of FEATURES that indicate some of the scope and depth of inquiry in our doctoral student projects. Equally, in co-writing, as shown here and in other essays that follow, we have engaged in close collaborative learning and expressive-expository design research rhetorical production and experimentation informed by the Learning Sciences, Social Sciences and Humanities, as is elaborated in Volume 2 (see also Feast, 2020). Such developments and relations in Master's and doctoral design education were taken up in a number of publications that preceded FUEL4DESIGN and to which it referred but sought to reach further into futures and design. In 2015 the collection *Design Pedagogy: Developments in art and design education*, edited by Tovey (2015a), provided a product design framed perspective. Snaddon (2020: 49) summarises this as follows:

Tovey (2015a) observes that, applying designerly ways of knowing in the context of wicked problems in a world of uncertainty can overwhelm and demotivate. To this, he suggests that students need support for agile navigation through design process and that 'learning experiences should develop students' natural motivations and professionalise this motivation to create resilient, informed and sustainable capacity' (p. 239). This, he points out, is the essence of transformative learning.

Anticipatory perspectives, however, were not deeply elaborated on in this outcome from a strategic U.K. funded project and a related Design Research Society feature and interest group. Tovey (2015b) also elaborated on a need to extend the traditional design pedagogical spaces of studio, tutorial, library and crit and their designerly ways of knowing to safe and liminal negotiative spaces to allow for immersive design active learning, involving students' own stories and the building of communities of practice through which identities as future designers may flourish (Tovey, 2015b: 5-6). Such learning, Lawson and Poggio (2015) argue, is about connecting social engagement and impact with communities and stakeholders via problem-based, collaborative and discovery-based learning in which students become autonomous and direct their own learning [[→ SEE FEATURE 2](#)].

Such views on design education were also connected to growing intersections between design and research, that is between practice and analysis inside design schools, as in their PhD programmes (Vaughan, 2017a), together with disciplines outside design (e.g. Gibson & Owens, 2015; Dubberly (2017). This extended for example to the inclusion of STS in design studio courses (Farías & Sánchez Criado, 2018). Acknowledgement also grew as to relations between 'things' in design and the need to see them relationally, such as in 'Connecting things: Broadening design to include systems, platforms, and product-service ecologies' by Dubberly (2017). As Snaddon and Chisin (2017) argued, this is very much now to do with futures-oriented design pedagogy. By this we mean approaches that look forwards in an anticipatory sense to the what-if, to that what-is-not-yet and

Towards Learning for Future Knowing Now

EXCERPT FROM:

Snaddon, B. (2020). *Learning for Future Knowing Now: Investigating transformative pedagogic processes within a design faculty in a South African university of technology*. PhD thesis. Oslo: AH0. 46–47. Available: [Link](#) »

BY Bruce Snaddon

Signature design pedagogies and a 'sticky' curriculum

The progressive educational philosophy of Dewey (2007) remains central in much of the literature on design education reviewed here. Notions of learning by doing and the value of co-created experience for teachers and learners focusing on the needs and interests of the student have become pivotal in contemporary views on education. In *Experience and Education* (1997), he expresses confidence in the 'potential of education if it is treated as intelligently directed development of possibilities inherent in ordinary experience' (p. 89), which has a pragmatism akin to Schön's contributions above.

This grounding in the ordinary is echoed by Shreeve (2015) in *Signature Pedagogies in Design*, where she talks about a shift away from a focus on the curriculum to include a whole-person approach to learning that is about embodied, experiential ways of

knowing and being. She makes the point that learning to become a design practitioner is not only limited to knowing facts but is more about a deeper experience requiring a 'change in knowledge, behaviours and emotion' (p. 83). The notion of signature pedagogies as 'learning activities that help students to think and act like design professionals' (p. 84) are examined in multidisciplinary settings so as to identify both generic and signature pedagogies across different design disciplines.

In later work, Orr and Shreeve (2018) describe the 'challenges, conflicts, dilemmas and ambiguity in the creative curriculum' (p. 23) as 'sticky', a term they use to evoke the teetering, tentative nature of sticky situations that might be difficult to negotiate and have uncertain outcomes that might go one way or another. Following through on their evocative metaphor, they assert that art and design curriculum should be sticky for the following reasons: 'it is messy and uncertain; values stick to it in ways that are difficult to see; it has an elasticity, being both sticky and stretchy; it is embodied and enacted – it sticks to the person; and it is troublesome and challenging' (pp. 25–26). This work is relevant to my study as these perspectives inform and situate my inquiry into our mode of experimental pedagogy and its engagement with troublesome and challenging issues concerning design education for long-term sustainability.

Responsiveness of design education to change

The *Changing the Change* conference in 2008 brought many designers, designer-researchers and design educators together to debate and discuss with some urgency, the role and potential of design research and education in the transition towards sustainability (Manzini, 2008). Gornick and

Grout (2008) discuss the paradox that although ‘designers appear to have reached an important stage of public and corporate recognition’ there is still an inability to take action in expectation of ‘an impending massive change in world conditions’ (p. 93). These authors, both design-educator-researchers, argue that a major reason for this paradox is that design education continues to react cautiously towards ‘current global issues that form the context for all design activity’ (p. 93). As society is in transition and new markets are emerging ‘we can and must be in the vanguard as proactive contributors, as this transition has much to offer designers’ (p. 104).

Davis (2011) in the *Icograda Design Education Manifesto* also voices her concern for the future of design education and the increasing gap between what is taught in university programmes and the global context in which it is practised. She comments that many ‘undergraduate programmes focus on the design of de-contextualised objects and a process with the goal of fixed, “almost perfect” results’ (p. 73). Barnett (2012) concurs by recommending that, if educators are to prepare students for the commonly valued dispositions in graduates demanded by the corporate sector; ‘adaptability’, ‘flexibility’ and ‘self-reliance’, then less emphasis on skills is required and more focus placed on dispositions ‘such as carefulness, thoughtfulness, humility, criticality, receptiveness, resilience, courage and stillness’ (p. 75). To this point, Capeto (2011) expresses the opinion that most importantly, ‘the act of designing should continue to be understood as an act of thought. As the design field, facing new conditions reassesses itself, and its boundaries shift once more, it is our role, as design educators, to ensure that ethics, quality and thoughtfulness remain significant factors in the mindset of new

designers’ (p. 57). This remains a challenge in design education and is central to this research in its study of learning spaces and situations that may bring about a shift in dispositions.



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to how that may be brought forward into today's pedagogies. These are designs for learning that work to structure open spaces and opportunities for a mode of learning as becoming, in contexts, sensitive to situations and appropriate to cultures and communicative needs. Such pedagogies increasingly face deep ecological and political-economic challenges and processes of change in which alternatives, differences and diversity are included and agency and participative action are paramount [→ SEE FEATURES 3 and 4].

In reaching into post-industrial physical-digital and human-nonhuman relations, design pedagogies do not simply erase legacies and practices of design. In a relational view, and certainly looking across contexts of design education especially in the 'Global South', design is implicitly connected with its histories, its cultures, its technologies, and its modes of inquiry. It's through these that our futures may be located and understood, and, at the heart of anticipatory design education, ways our local and planetary scale imaginaries and their influence and impact on the present may be realised in terms of socio-cultural, eco-technical and environmental intersections.

The Design Promises of Futures

By Andrew Morrison & Bruce Snaddon

Design education for 21st-century contexts

Wilson and Zamberlan (2017) discuss what they term 'design pedagogy for an unknown future'. They summarise their views, ones that we see as relevant in discussion of a slew of publications on design education since the start of this decade, as follows:

... creativity in the expanding field of design plays a fundamental role in addressing the challenges that come with operating in a supercomplex world, for generating new knowledge in design, for creating meaning and value, and importantly, for contributing to cultural capital. There are opportunities for researchers to further explore the relationship between creativity and the types of collaborative and interdisciplinary settings that are becoming more commonplace in design, and to investigate the social conditions that lead to creativity and make it thrive. Existing definitions of creativity commonly used in design education, such as novelty and originality, tend to focus attention on creative products. As a discipline we need to find different ways of describing creativity in design that adequately capture the variety of modes in which creativity is being practised, driven, harnessed and implemented. (Wilson & Zamberlan, 2017: 115).

Such views are central to a diversity of views, trans/disciplinary configurations and perspectives proffered about '21st-century design education'. In such a call - a century after the foundation of the Bauhaus and global diversification in various cultural and national settings, from Korea, to India, to South Africa, to Chile, Brazil and Mexico, to mention a few - there are various views and historiographies of design and perspectives as to prospective design education. In this volume we offer an orientation to some of the key texts: design in crisis (Fry & Nocek, 2021), adaptive mentalities (De Vet,

2020), on decolonial aspects (Mareis & Paim, 2021), design and emergency (Anastassakis & Martins, 2022; Rawsthorn & Antonelli, 2022), design activism (von Busch, 2022), redirecting speculative design (Mitrojc, et al. 2021) and critiquing co-design (von Busch & Palmås, 2023). We acknowledge that they may be read and positioned differently depending on design colleagues' own world views and design educational programmes and curricula, and within design schools. What characterises the concerns and proposals in these design research publications on design education, their selection and arrangement, their positioning and implications?

In taking up these and related issues, we refer to five recent collections of design education research publications from which thematically we draw on a selection of items that we include here in this chapter at a more macro-level and more specifically in the ones that follow. This may be one of the largest volumes of publications on design education within just a few years that we have seen in the life of design research and design education analysis. This together with the growth of SIGs indicates that design education has emerged as a major field within design research and internationally so.

The first group of publications is a paired set of special issues on design education in the journal *Shi Ji*. It is this that we turn to next. The second is a four-volume set of proceedings from the *Learn X Design 2021* conference, marking the 10th anniversary of the series, held at Shandong University of Art & Design, Jinan, China. The third is the PIVOT conferences (2020 and 2021) that are listed under the The Pluriversal Design Special Interest Group of the Design Research Society (DRS9 as 'liberatory and radical spaces for the design research community to promote/create intercultural and pluralistic conversations about design'. The fourth is a body of publications taking up matters to do with diversity and inclusivity, mostly in the form of book collections from the past three years. We further refer to them, especially on 'decolonising design', in the closing chapter to this first Volume entitled **Learning Futures Design Otherwise**. There too we also address a fifth set of design education papers concerning the changing processes, content and character of design education is most recent and offers a range of implications and discussions on design pedagogies in the pandemic. This refers to design education papers in the SIG at the *2022 DRS Conference* in Bilbao, Spain, available in the DRS Online Library. Given these appeared towards the end of our project, we filter a selection of these papers into the essays that follow and take them up in the final chapter as recent resources for rethinking futures of design education but more specifically anticipatory design pedagogies.

Key challenges to futures of design education

One of the initiators of the two back-to-back issues of *Shi Ji*, Noël (2020a: 5) wagers, in his editorial to the first volume, that 'If we claim that designers can solve the complex problems of the world but we cannot improve design education, then our claim cannot be sustained.' Matters around improving evidence-driven design education were taken up by a variety of writers invited to present experience, responses and cases and to discuss key competencies, values and practices and designers should have in 2025 (Noël, 2020a: 7). As a result, Noël (2020a: 7–11) outlines 10 key challenges facing contemporary design education and its developmental futures. These are:

Reflection on PhD, Learning and Design Futures

EXCERPT FROM:

Zou, Y. (2023). *Speculating on Design, Life Styles and Forms. Studies in the contexts of climate change and sustainability.*

PhD thesis. Oslo: AHO. Available: [Link ↗](#)

SUPERVISORS: Prof Andrew Morrison & Prof Håkan Edeholt (AHO)

BY Yue Zou

Design, ecology and futures in anticipatory doctoral learning

In this doctoral research, I have been motivated to pursue three connected themes centring on speculative design and long-term sustainability through cosmetics: the potential contribution of imaginary-driven approaches, the exploration of ecological cosmetics beyond consumerism and cultural understandings of quality of life and survivable futures. I wanted to investigate these themes through speculative design inquiry as a mode of research. I was keen to draw on my experience in consumer-related design and everyday life, in design trend studies and, partly, in cosmetics design. However, I also wanted to move beyond these practices. I saw a need to examine alternative ways of approaching the undeniable pressures of climate change and investigating ways to rethink the relationships between design, ecology and futures where human-nonhuman relations are central.

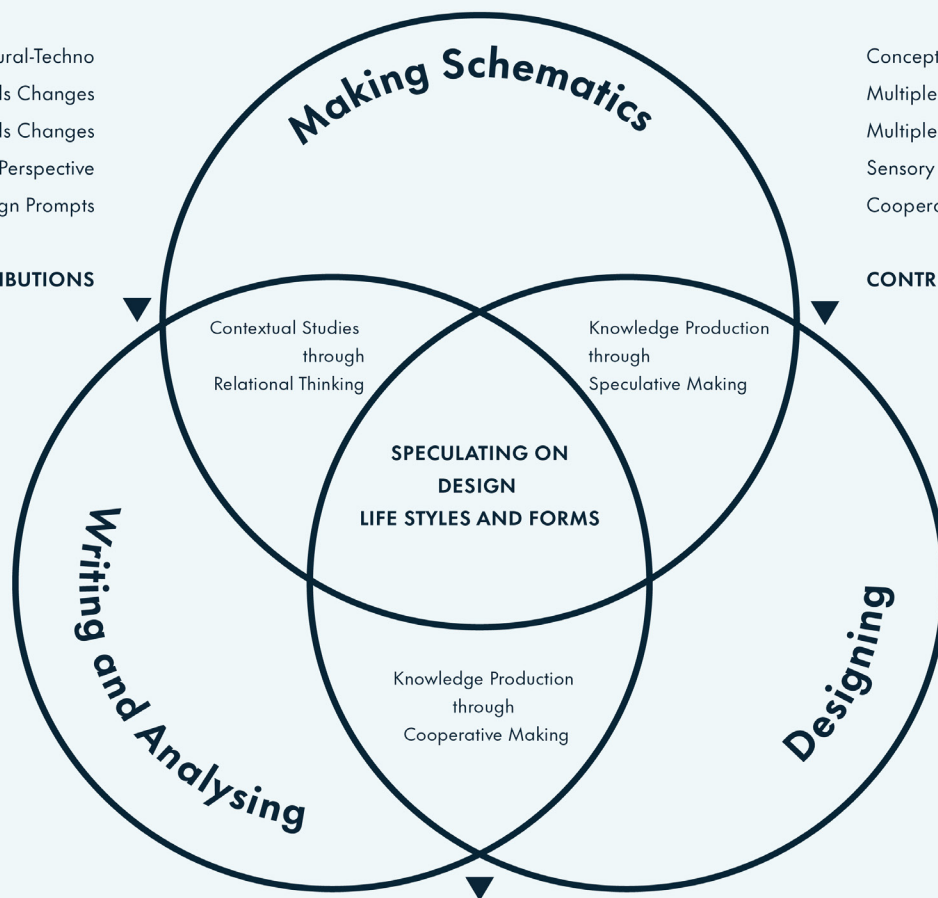
Relational Thinking of
Posthumanist Design
Facilitating Design Ecology
Relational Life-Style
Potential Speculation

Eco-Cultural-Techno
 gn towards Changes
 gy towards Changes
 yle-Form Perspective
 ative Design Prompts

CONTRIBUTIONS

Conceptual Cosmetics Design
 Multiple Sensory Design
 Multiple Intelligence Design
 Sensory Form
 Cooperative Style

CONTRIBUTIONS



CONTRIBUTIONS

Non-dualist Design View
 Futures Design through Life Style and Form Perspective
 Posthumanist Ecological Design View
 Design for Wellbeing
 Design for Flourishing

- 1 Train & Educate: Moving beyond Know-How
- 2 Create a Context for Inquiry: From Objects to Problems
- 3 Change the Conceptual Network: Identifying the Problems' Components
- 4 Broaden the Scope: From Designing Solutions to Implementing Change
- 5 Figure out the Subdisciplines: What Are We Educating for?
- 6 Encourage Teamwork to Foster Collective Thinking
- 7 Equip for Life: From Learning to Do to Learning to Learn
- 8 Engage Students in Their Learning, They No Longer Sit Still
- 9 Foster Reflection and Build Capacity to Incorporate a Sustainable Lens
- 10 Promote Inquiry from Different Angles: Where You Begin Affects Where You End.

Readers may well see many future-related matters in this list and recognise them as already central to their changing pedagogies as we teach and research, study and design in times of crisis and change [Figure 5]. As this material is open access, we will not summarise the details of these ten items. We encourage readers to consult these two volumes for they offer us much on which to base and to reconsider our design educational practices and research.

The articles are offered to generate dialogue and contribute to enriching our collective community of design education practice. Noël (2020a: 11) concludes the information provided can help with 'access to actionable knowledge and best practices'. From a North American context relating design education and public administration and policy,

Figure 5 ▼
Facing challenges and options in shaping design futures in using the 'Atlas of Weak Signals physical kit'. Master's in Design for Emergent Futures (ELISAVA, IAAC, Fab Lab Barcelona), IO3 DESIGN FUTURES SCOUTING. (Image credit: Fab Lab Barcelona).



with impact for public health domains to planet levels, Whitney and Nogueira (2020: 154) argue that ‘contemporary institutions, organisations, and ways of working need to be reframed to fit the new, more flexible, networked world we have entered.’

Crisis, change and contexts

In his second editorial Noël (2020b) summarises a fan of articles that he frames as contributions to what he entitles ‘Fostering design learning in the era of humanism’. By this she means big changes, such as the COVID-19 global pandemic, and that ‘This is perhaps our opportunity to do a much better job at educating future designers, who will need to face unknown challenges related to the crisis climate, health, and social and economic inequality.’ This second volume addresses some of the same concerns we take up in FUEL4DESIGN in reorienting design curricula and practices in challenging times.

In a related piece, Redström (2022) discusses two aspects of changing design education: certain uncertainties and the design of design education. These he situates in relation to design education being carried out in uncertain and increasingly complex times. He refers to certain uncertainties as much to do with what is inherently uncertain in design and argues that this is ‘also due to an increasing ambition and ability within design to both appreciate and address such complexity’.

Following a review of the changing character of change, from industrial design to the Ulm school, the design methods movement in the U.K represented by Jones, to the emergence of participatory design, Redström points out that there is a shift from why and how to who in design. Redström (2020: 87) observes that:

We can see the traces of each of these once-radical transformations in how we work today. We see them in the ever-expanding repertoire of prototyping, and how we still constantly come up with new ways of manifesting ideas, concepts, and use situations depending on what objectives, contexts, materials, and technologies we engage with. We can see it in how we continuously change and invent new design methods and processes as we understand more about the expanding design space and how to work with it. And we can see it in the many different ways to include people in a design process, ranging from design teams, field studies, and participatory processes, and in how the boundaries between ‘designing’ and ‘using’ undergo constant change, not to say gradual dissolution. One could say that the transformation of making from actually making things to making things possible built an inherent instability into design that ensures designing will never be quite what it used to be.

In conjunction, Redström (2020: 99) sees the design of design education as needing to be based on research. He asserts that this needs to be enacted with a theoretical base but cautions that this isn’t about stability and order but ‘to make things less certain’. For Noël (2022b: 126), points to the following as core issues in what he terms attaining quality in future design education and their institutional and eco-systemic settings and programmes: ‘It requires institutions build their capacity to change their mental models, reexamine business models, and more.’

Framing Futures

EXCERPTS FROM:

FRAMES FOR FUTURES, [Link ↗](#)

DESIGN FUTURES LEXICON (IO1), AHO [Link ↗](#)

FUEL 4 DESIGN

MODULES

RESEARCH

EVENTS

BLOG

ABOUT

DESIGN FUTURES LEXICON ESSENTIALS



FRAMES 4 FUTURES

FRAMES FILLED

This ESSENTIAL provides you with four broad categories for positioning and sorting approaches and settings for understanding FUTURES DESIGN and DESIGN FUTURES LITERACIES. Related work also appears in are provided in FRAMES 4 FUTURES (Frames folded).

<p>CONTEXT</p> <p>Definition: Setting, environment, situation, circumstances, surroundings and linked conditions of an idea, concept, event, process, artifact, outcome or potential result</p> <p>Elements: Climate change, global-local tensions, political uncertainty, diminishing resources, viability, sustainability, circular economy, collective gain</p>	<p>CONDITIONS</p> <p>Definition: Term, state, factor, circumstance, limit, boundary, restriction, category, quality, provision prerequisite or factor that impacts on a place, qualities process, persons, event or outcomes</p> <p>Elements: Contingency, indeterminacy, flux, rapid change, unpredictability, flexibility, degrowth, repurposing, assemblages, networks, opportunities, distributed</p>
<p>COMPLEXITY</p> <p>Definition: Various, different, linked, interrelated elements, parts, processes and systems in detailed, dense, complicated, obscure, contingent, rich, multiple, intricate, diverse, dynamic, collected situations and relations</p> <p>Elements: Interconnectedness, overlaps, intersectioning, multiplicities, differential, multimodalities</p>	<p>CULTURES</p> <p>Definition: Social, group, interests, conventions, organisations, behaviours, practices, aspirations, expectations, experiences, stories, performances, expressions, creativity on shared views, beliefs, values, fields and knowledge exchange</p> <p>Elements: Plural, socio-technical, networked, collective, trust, non-hierarchical, experimental, agnostic, co-creative, resilience</p>

Download this ESSENTIAL in printable format:

PRINT VERSION

DESIGN FUTURES LEXICON ESSENTIALS

FRAMES 4 FUTURES



FRAMES FOLDED

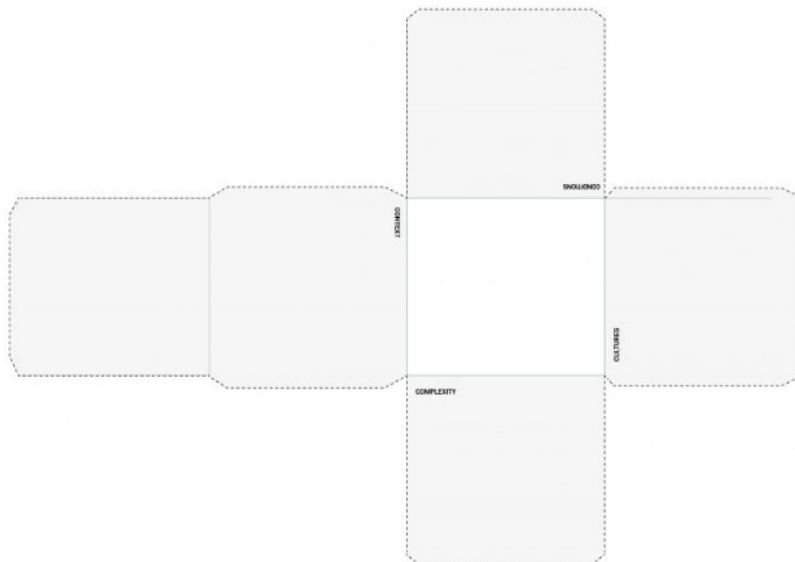
This ESSENTIAL provides you with a three dimensional and foldable version of working with FRAMES 4 FUTURES. Details on definitions and elements for positioning and sorting approaches and settings appears in FRAMES 4 FUTURES (Frames filled).



INSTRUCTIONS

To be printed on an A3 sheet.

1. In the centre square, in capitals note the title of your brief/project/Research.
2. Write a 200 word description of your work beneath the title.
3. Go to each of the 4 Frames and fill out the following details.
4. In each Frame, write a one line statement of your project's core issue, using definitions and elements of the Frame.
5. In each Frame, write a 100 word description of how you tackle your issue drawing on the definitions and elements.
6. For the print version, take a photo and upload. For digital, save your file and upload.
7. Cut along the dotted outline and fold on solid lines. Stick the flaps to form a cube.
8. As a group (or for a set of your own projects) make a mobile of your cubes.
9. Upload photos of your mobile/s.



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PRINT VERSION

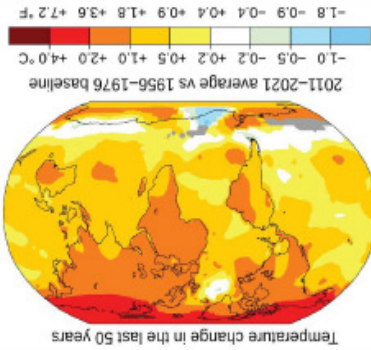
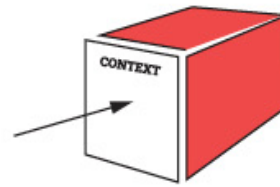
INSTRUCTIONS

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7. Cut along the dotted outline and fold on solid lines. Stick the flaps to form a cube.
8. As a group (or for a set of your own projects) make a mobile of your cubes.
9. Upload photos of your mobile/s.



CONDITIONS

Speculating on Design, Life Styles and Forms

My research explores a speculative, nondualist, and relational design approach to engaging with ongoing climate change and sustainable design transformations. I build up an Eco-Cultural-Techno Design Speculative Approach to understanding the problems and potentials of long-term sustainable transformations from a posthumanist view. My conceptual approach based on design-centred, posthumanist notions of life forms and life styles tries to investigate Eco-Cultural-Techno futures for transitioning to long-term sustainability and demonstrate the design-informed possibilities of multisensory and cooperative futures that could contribute to long-term sustainability.

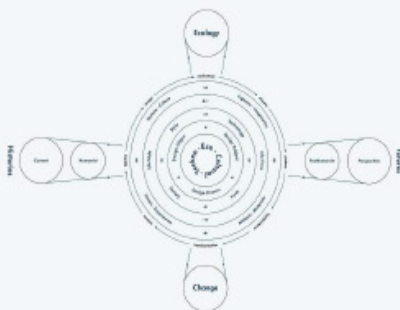
CULTURES

This research tries to counter culture of reductionism and consumerism through imagining plural futures creatively.



COMPLEXITY

From posthumanist view, we have many dualism needs to be cancelled, such as human and nonhuman, culture and nature, west and east...



FUEL4 DESIGN / LEXICON

FRAMES 4 FUTURES

On leaders, managers, students and teachers she argues further that:

They will need assistance: time to reflect, reexamine, and plan change; people to listen, to follow, to share; training to unlearn and relearn; guidance to make choices, and even emotional support to persevere when facing obstacles in change processes. To master this challenge in the pursuit of quality we need dialogue, a sense of relatedness, mediating processes, new spaces to motivate the impact of adversity, and to engage in a continuous effort of learning, of individual and collective growth. (Noël, 2022b: 126).

21st-century concerns

Skills, competencies, attitudes and engagement, from agendas and stakeholders to situated user development and re-design in collaborative practices, continue to be mentioned as key matters for the future of 21st century design education. Meyer and Norman, with a specific U.S view based in business and technology design education universities and commercial collaborations, argue that designers offer societies key agents of change but that design may well consider other professions and their developmental and benchmarking criteria for building effective curricula.

Such arguments have a place in design education, along with the argument for practice-research synergies. Meyer and Norman (2020: 39) posit a set of common skills for designers around core challenges as: performance, systemic, contextual, and global. Most institutions already activate such skills orientations, though question narrow skills that may become out of date, though scale and enact them differentially due to disciplinary and transdisciplinary configurations, materials and contexts of culture and use, it may be said.

In this characterisation, the human and social sciences and design as ‘ill-defined’ (Swanson, 2020: 102) remain under signalled in such a view on design education, (and the article seems to argue for a universal, almost standardisation of components that many design origin schools would query as advisable or possible) whereas in our own work, graphic design and fashion, communication and media aspects are not included and a major part of the wider and intersectional design profession and creative sectors. Swanson does address matters of changing graphic design education via fostering thinking through making, the avoidance of monocultures and visual vocabularies ‘to bring the designer face-to-face with a range of issues – fractal, tonal, and so on’ (Swanson, 2020: 103) where visceral aspects of prototyping are central too.

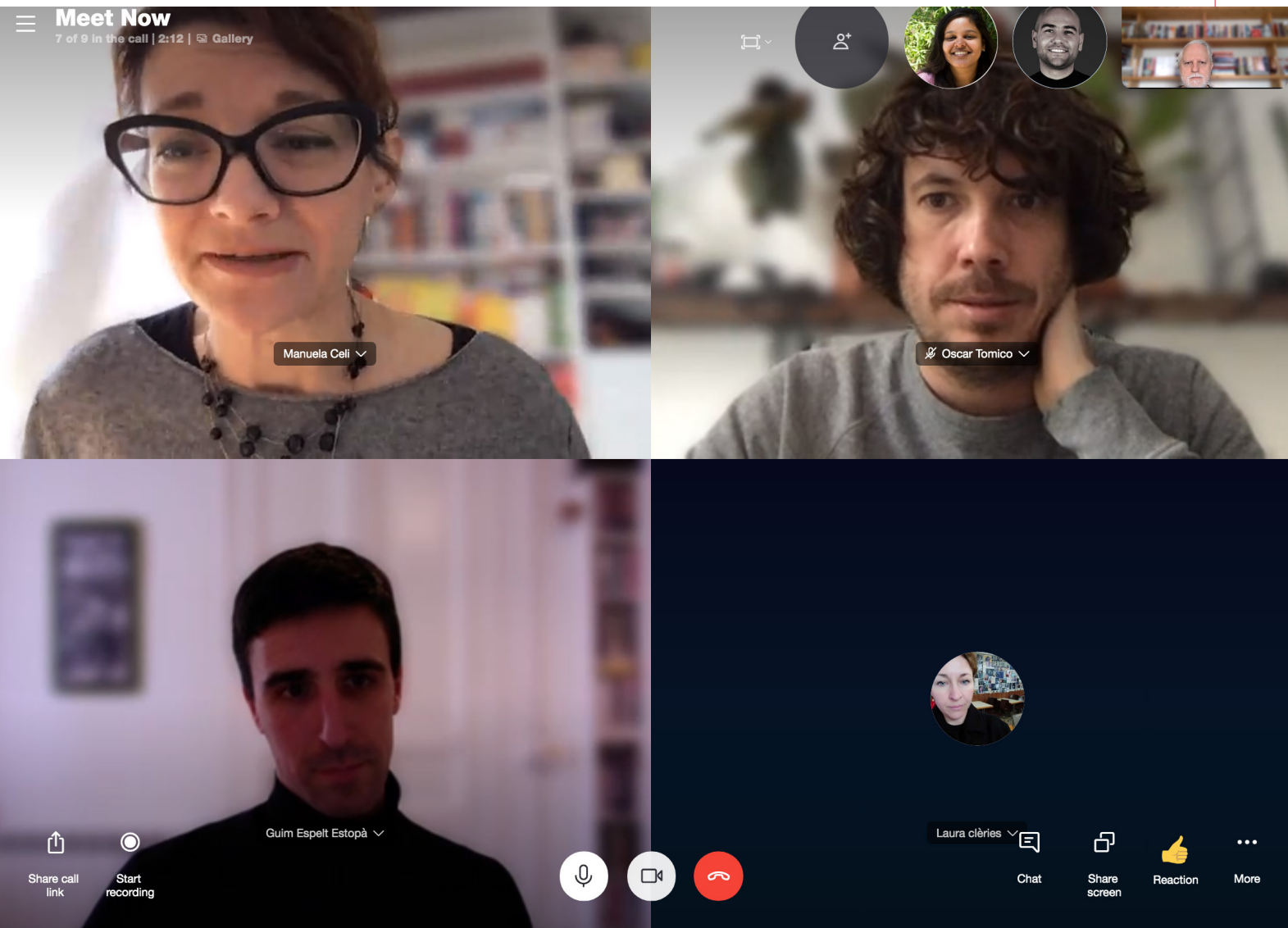
Naturally, design education occurs in diverse venues, such as inside discipline based research universities with Human computer Interaction; however, these stand-alone design schools have shifted vastly in their interactions and collaboration with other higher education, public and private organisations and there thus exists rich room for cross-sectoral education, via modular and co-designed courses [Figure 6].

This occurs within PoliMi for example, in Italy, and between AH0 and the University of Oslo, in Norway. What this article highlights is the need for clearer educational framing of learning and change, not only in macro thematic terms. Needed are initiatives,

experiments and ventures, as Noel and Meyer and Norman do argue, however, in our view these must be more specifically located in deconstructive and even more radical reconstructions (and not only incremental ones such also proposed Pontis & van der Waarde, 2020) of the roles of world views, vocabularies and discourses, critiques of tools and their marketers and mediational consequences that are actually addressed by ancillary and affiliated domains in design research. Whether this may be from STS or critical literacy studies, they are in fact already embedded in design education programmes such as in Malmö University and in their Collaborative Futures Platform research programme.

▼ **Figure 6**
FUEL4DESIGN
educators in a
typical project
discussion and
planning session
on design futures
teaching and
learning: the
session here in
Skype, but usually
in MS Teams or
Zoom.

How such concerns may be translated into design practice are addressed further in terms of qualities and competencies of 21st century designers in curricula and courses. Pontis and van der Waarde (2020: 229) highlight the importance of self-determined learning in design education that has 'responded to increasing complexity and systemic transformations'. Curricula have expanded from an 'artifact driven problem solving' focus to user-centred, digital and collaborative skills linked with real-world contexts.





◀ **Figure 7**
The Perspectivism card for world-building: "Turn your human centred-perspective upside down, put it aside, shrink it to accommodate the nonhuman". The 'Hacking Futures' Philosophical Pills workshop at Central Saint Martins, UAL, 7 February 2020. (Image Credit: James Bryant).

However, they note that master'-apprentice models still prevail. Referring to information design curriculum development, Pontis and van der Waarde (2020) highlight relations summarised here (tabulated in their text between four dimensions, A-D, and a list of nine changes). These are:

- A) Professional practice: 1. Design problems have become more difficult to frame, and increasingly ill-defined, 2. Problem scopes and scales have broadened, and now require cross-disciplinary teams;*
- B) Teaching arenas: 3. Design education has broadened and diversified, 4. Pedagogical training and research experience have become essential requirements for teaching design;*
- C) Students. 5. The number of students enrolled in design courses is increasing, 6. Student populations are more diverse, variedly motivated and with different levels of expertise; and,*
- D) Teaching approaches: 7. Master-apprentice pedagogical models do not appropriately prepare students for today's design challenges, 8. Learning through fictitious projects is not enough to navigate real-life situations and 9. Assessment criteria based on visual quality can no longer be used to comprehensively assess students' learning.*

While these relations, dimensions and changes offer many key aspects for exploring ways to address changes as the authors offer, missing is any explicit mention of working with futures as relational design material [Figure 7] and engaging in notions and explorations of anticipatory designing and anticipatory design curricula.

In 'Tomorrow's critical design competencies: Building a course system for 21st-century designers', Weil and Mayfield (2020: 159) identified three main competencies for future designers: embracing complexity, cultivating possibilities and driving impactful change. These they see as implicated in transitions, experienced at the Institute of Design in Chicago (USA). These they clarified as:

... we want to continue to equip, train, and educate graduates who move fluidly between strategic thinking and creative doing, and know the importance of both. So we agreed that our curriculum should evolve toward a focus on critical, emerging, evergreen competencies rather than technical skills and processes that might quickly become stale or outdated. (Weil & Mayfield, 2020: 159–160).

Overall, course development is seen as part of championing and leading practices 'to build cooperative, responsible, and intelligent futures-helping lead people and communities to transform society and the economy.' (Weil & Mayfield, 2020: 167). A focus on broad competencies is taken further by Brosens et al. (2021) who demarcate design education futures at three levels - macro, meso, micro - onto which they map ten related scenarios for preferred change. These are summarised as:

Macro:

- 1. Design education for life-long learning,*
- 2. Design education in partnership with industry, 3. Design education that interacts with societal problems through cybernetics);*

Meso:

- 4. Design education as an advanced trans-disciplinary field,*
- 5. Design education omitting the studio space, 6. Design education as a personalised flex-path learning experience;*

Micro:

- 7. Design education that scaffolds domain-specific knowledge and skills,*
- 8. Design education as non-hierarchical education, 9. Design education that untangles the learning process, design process, and outcome, and 10. Design education where science-based choices are developed into intuition.*

For Brosens et al. (2021: 865), there is room for experimental, disruptive and alternative approaches to update design education:

The authors therefore ask designers of design education to question what the field has accepted and routinely does, and to be open to different ways of looking at things. Proof that this questioning is already happening is visible in the micro-level scenarios.

These discuss the need for untangling, clarifying, and a sense of fairness in design education, but mostly these all relate to a student-centred approach. This resulted in the raised discussions on scaffolding knowledge and skills in order to assist students in transferring knowledge, on teachers becoming coaches or mentors, on assessment of process, product, and learning, and on designer identity development based on science. The latter two scenarios, combined, could lead towards a drastic improvement of the objective assessment in design education. Reflecting on these micro-scenarios, the authors call for design institutions to consider a student-centred approach that untangles and clarifies students' knowledge acquisition processes when reformulating design education.

Student knowledge acquisition needs to be also further connected to the reframing of sustainable shared futures (see Volume 2, **Essay 3: Sustainability, Systems & Learning Design Futures**).

On global sustainable futures

Wilde (2020) substantially addresses futures matters or mentions anticipation (a key part of her argument, and references, that does not appear in the summary of her text in the editorial). While such an editorial and collection cannot cover every issue, need, aspiration or assertion, it is rather surprising that, given the societal, economic and environmental force of climate change, anthropocenic transdisciplinary discourses, challenges of sustainability and claims to circular economies, further mention is not made of related details. These include details how to work with instability and uncertainty, emergent and prospect aspects of design education being seriously challenged to engage in deep, perhaps self-transforming and even alienating change for very different 21st-century design education. (See also Volume 2, **Essay 2 Altering Prospective Design Pedagogies**).

Lest, we go too far, and miss the subtleties and incrementalism, commitment and negotiative delicacy of such change as offered in the collection, we suggest readers reach for this second volume and use it as the platform for generative, not dismissive dialogue we too seek to support. However, we are surprised that claims to 21st century situating design education does not explore futures views when mentioning plurality and details and connections to sustainability as Wilde offers. There remains room for more elaborated perspectives on futures or anticipatory views on design education. In all five of the sets of recent publications, these are the thinnest and yet perhaps, in our view, the most urgently in need of collaborative review and development to meet the very challenges outlined above, and to reach beyond them, and critically back into our near and medium term design educational pedagogies, practices and publications.

For FUEL4DESIGN what is under-articulated in these lists list and many of the supporting articles in the special issues, including a wide-ranging recent set of systemic and somewhat programmatic recommendations in the journal *Shi Ji* (Davis & Dubberly, 2023) is attention to working with *futures*. , Further, largely absent in this important and growing body of work, and its increasingly acknowledgement of pluriverality in design

education (Noel, et al., 2023) is a reference to anticipatory perspectives, whether from Futures Studies, foresight practices, design and creative cultural imaginaries, design fiction or speculative design.

‘Prospecting’

By Andrew Morrison & Bruce Snaddon

Towards ‘Anticipatory Design Pedagogies’

In FUEL4DESIGN, our discrete and collective work has not been to amass best practices and dominating framings. Rather, it has been to work in a post-qualitative exploratory way (see the essays in Volume 2 for details) that is risky and venturesome. Such non-binary learning together and anew seeks to identify and try out, to shape and to share, concepts, practices, analyses and potentials of a futures orientation to design education.

Such a shared venture we call an *Anticipatory Design Pedagogy*. We connect it to a relational view on anticipatory design and designing (see Volume 2, **Essay 1: Anticipatory Design Literacies**). This is more keeping with the second special issue of *Shi Ji* on design education in 2022 and the anticipatory re-positionings (Davis, 2023: 92) and elaborations charted by teams of contributors to the recent collection of Summer 2023.

Overall, we suggest one of the major issues appearing in re-reviewing these two earlier special issue volumes is a dispositional lack of detail on the world views, the ontologies and the methodologies upon which design education is premised and practised. Such views are more explicitly framed in other domains of design inquiry. Little reference is made to other works in the learning sciences, to major cultural critiques concerning political economy and design and to the seriousness of designs’ legacies and complicities with economic models of extraction, imperialism and foundation in a growth-without-limits mode that can no longer be perpetuated in how, what and what we do, include and prospect in a design futures literacies approach.

Recursive, intersectional and emergent

Such matters we take up in the working of FUEL4DESIGN, modestly, tentatively and in dialogue, acknowledging their seriousness, institutional needs and constraints. We continue this in our reflective essaying in the next volume. We address matters of ontological and methodological concern and care, and we look into potential and troubling challenges to business-as-usual, assumed and preferred learning trajectories, and change processes of disruption, defiance, deviance and difference. These we also offer, in dialogue, as framed in a positive, not dismissive or destructive, mode of anticipatory learning together for survivable futures. We take up such matters in the chapter **Design Education Reconsidered** and in the extended essays that comprise recursive, intersectional and emergent aspects in Volume 2 of *Design Futures Literacies*. Next, we present a set of design pedagogical elaborations from the FUEL4DESIGN partners and participants.

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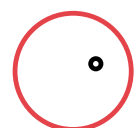
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PART II.

ELABOR



RATING

PART II.
ELABORATING

ARTICULATING



101: DESIGN FUTURES LEXICON



BY Andrew Morrison & Palak Dudani





What is the Design Futures Lexicon?

The DESIGN FUTURES LEXICON offers an experimental and flexible suite of diverse, interconnected, non-linear online and print resources for contextualised self-directed learning. The LEXICON accentuates the plural roles of language as verbal and multimodal design material for working critically and relationally in shaping design futures and design futures articulations.

As designers we think that what we are shaping is creating impact and change, but we need to realise how we talk, make and think is influenced by other disciplines, frames, practices, normalisations and modes of communication. This can simply reproduce existing practices and reiterate assumptions. Our imaginaries need to be approached critically and creatively through pausing and looking closely and carefully at the language we use. Our words matter immensely and in relation to multiple modes of communicating by designing and in design artifacts, processes and design mediated expressions and evocations and the ways participants and users are affected by them and enact them in their own design performativities.

While words are everywhere in design - from presentations to annotation, written texts and crits, promotional pitches and the constant give and take of assessment and revision - relatively little language research and learning resources exist that connect design, futures, language and pedagogies (e.g. Doloughan, 2002). The LEXICON is designed to introduce, facilitate and support critical, positional and applied uses of language in working with future. In design learning in terms of capacities and fluencies for working with language, creativity, imaginaries and speculation. To do this the LEXICON adopts a relational frame. It draws on key perspectives, concepts and practices from Applied Linguistics. In the 1990s Critical Language Awareness and Critical Linguistics emerged. Recently, a more broadly relational and globally diverse Critical Applied Linguistics has developed. This includes perspectives from the global South and decolonising language as well as concerns from posthumanism [→ SEE FEATURE 1]. It is built and exercised through a relational ontological view that acknowledges that the ongoing nature of meaning making, flux and adjustment (Avanessian & Hennig, 2017). It also draws on recent expansion of core situated approaches to include onto-epistemologies of new materialism, ecologies and embodied knowing (e.g. Toohey, 2019).

Given these matters, the LEXICON has been drawn up and has explored a range of uses as a means to engage with a number of key questions concerning language and



◀ **Figure 1**
Students selecting and discussing futures terms from the 50 DESIGN FUTURES WORDS that have fallen from a popped balloon in a PhD workshop using the tool BALUSION AHO, autumn, 2019. [Link](#) ▶
(Photo: Palak Dudani)

design, futures, pedagogies and power. It has done so through design and research, experience in pedagogy and in working with futures inquiry and inventive methods. It's done this along with insights from Critical Applied Linguistics, practice and analysis in digital media, technology and communication, and a diversity of experience in reflexive interdisciplinary design research. We join these views with one that sees that '... the world that language mediates is made up of relations, not of objects and a semiotic relational ontology in which language evolves recursively and 'further develops the world in ever-new referrals back to itself.' (Avanessian, 2016: 199, 200). We mention these as our perspective on language, and English, is pluralistic, prosessural and always situated in contexts of becoming and reaching towards alternative, hopefully different and decidedly better and plural futures through designing.

An ecology of design futures language questions

These concerns are rarely asked and explicitly phrased with regard to language and its heterogenous relations to other modes of communicating and knowing. Where design and learning are seldom covered in the learning sciences, the LEXICON also takes up situated, collaborative and pragmatist pedagogies and entwines them with Design's role in offering difference, disruption, surprise and the imaginary [Figure 1]. This is not to fetishise the novel or the innovative for its own sake. Nor is it to perpetuate positions of power and privilege. Rather, it is to remind us that Design is the domain of creative, imaginary making in which a diversity of materials, expertise and processes are interwoven contextually and performatively.

Some key questions:

Whose futures language and design languages are we speaking?

Which shared vocabularies might we experiment with and put into active, purposive, playful and critical use?

Why does it matter to include language as a design material in shaping futures learning, designing and researching?

What lexis do we adopt, adapt, redirect, reject and replace and why so in design futures directed activities?

How might we articulate our design futures and futures designs through intentional choices and contextual enunciations of design terms and discourses?

What might a critical futures design language awareness offer, embody and perform in building and sharing paths and actions for shaping the present differently by design?

When and how might plural views of language, as multimodal and multi-lingual be accessed and enacted to enrich wider design futures communication and pedagogies?

Where might we find opposite resources, pedagogies and analytical framings to position the development and use of words and rhetoric in articulating design futures?

What roles, restrictions and potentials exist and may be reconfigured concerning the uses of English for futures design pedagogies?

How might students build situated critical language awareness to articulate their own situated understandings of design futures?

Which lexical and discursive resources might we devise and develop through use to facilitate the specific needs of Master's design learning and doctoral design students in becoming researchers?

Which tools, methods and meditations can be included and developed to support the realisation and enunciation of verbal and multimodal expressions and critiques in enacting design centred futures?

Toward proactive, potential survivable futures

At the core, the intention of the DESIGN FUTURES LEXICON is to engage and support students and educators in exploring experimental and emergent articulations of design futures – ones which reconsider matters of position, identity, voice and mediation in shaping alternate futures in the present and alternate presents for plural futures. These are futures, which might invite, provoke and even demand of us, reconsiderations of designs' legacies and complicity in modes of futuring that have led us into crises and contexts of climate change. Challenging our human sense of superiority over nature and other creatures and ecologies, they ask that we acknowledge and enact more respectful and responsible interplays of design for humans and non-humans.

This is a design future that focuses on building and re-assessing interplays of culture, environment, technologies, artifacts, processes and systems as dynamic relational ecologies. The LEXICON does so in working together with other parts of the FUEL4DESIGN project. It is concerned with processes of making change, not via prescriptions or directives, but rather through a set of heuristics or opportunities that may be realised in co-creative, critical design informed and futures facing activities. Shaping 'critical language awareness' is therefore about literacies as capacity building and the facilitation of fluencies. It is also a matter of the motivation of what we call 'vibrancies' or participative engagement, connected to influence not only impact.

SURPRISING FUTURES DESIGN WORDS

WITH DEFINITIONS

This set of words is deliberately alternative, and more than a mouthful, in that it offers unexpected, surprising and possibly deflecting and disruptive words. The intention is that they prompt, propel and provoke you into thinking about how to define and use them, refine or replace them. The working definitions provide some sense of the concepts that are proposed. For ideas and other words to consider and combine, you may also like to see [50 FUTURES DESIGN WORDS \(Words only\)](#) and [50 FUTURES DESIGN WORDS \(With definitions\)](#). For larger lists see [250 FUTURES DESIGN WORDS](#) and [450 FUTURES DESIGN WORDS](#).

After future washing

A point of arrival, clarity and understanding about the nature and processes of how design oriented futures are put through a robust laundry of activities to highlight their viscosity, pliability and plasticity, whether as harmful

▲ Figure 2

Selections from SURPRISING FUTURES DESIGN WORDS, part of the ESSENTIALS section, DESIGN FUTURES LEXICON. [Link](#) »

Focus on articulating design futures projects and pedagogies is both a critical and pragmatic activity. It asks that we engage imaginatively, playfully and sceptically with futures vocabularies and the speculative and prospective discourses they may enunciate [Figure 2]. It asks that we look at stances, directionality and persuasive ways such views may shape and position futures facing discourses and the relations of language to materials, media and modes of communicating futures design and acts of designing futures.

Explorations with design futures need to be informed historically, and to be mindful of earlier projections of proposed and desired futures. They crucially also need to be flipped back into the present to prompt, promote and provoke us to think again about the 'worlding-by-design' we are pitching and encourage a plurality of futures, ones which can be materialised through situated social practices. For design pedagogies and literacies this is about developing an active attunement and awareness to ways words encompass, embed, and convey meaning in and across time, different domains of design and in regard to other disciplines and practices.

Multicontexts and multiliteracies in making and becoming

In developing the LEXICON in the autumn of 2019, we worked closely together, first in our usual studio, seminar, workshop and lecture modes as the first of the project's work packages. However, this was radically interrupted by the global pandemic and a total

shift to online communication, including our own as learning-designers and educators. Our summary of this work here is shared as a retrospective: in addition to more recent research, it draws on our ongoing work and collaboration connected to the project as Palak moved from her focus of the work package into a commercial design bureau in Norway and Andrew continued in the project, with related work, PhD supervision and co-publishing.

It's taken us a while to also articulate our own perspectives as colleagues who spent much of the early pandemic together online. Part of that journey has also been a need to better articulate that we are both from the Global South, though now longer term inhabitants in Norway, and that we have been educated, worked, designed and researched in the Indian subcontinent and southern Africa. We have only ever been critical and creative users of varieties of English (e.g. Saraceni, 2015) and World Englishes (e.g. Kachru, 1992a, 1992b), in which multilingual languaging is embedded in daily life. While much higher education may be conducted in English, this dominant world language is deeply deconstructed and decolonised (e.g. Stroud & Prinsloo, 2015) in the universities and commercial practices in which we have ourselves learned, taught and worked. Further, in the context of FUEL4DESIGN, with English as its medium, we worked with a diversity of participants and contributors, most of whom did not have English as their primary, 'home' language.

Overview

How is the Lexicon framed?

While English is acknowledged as a language of international communication, for the majority of global citizens and students English is 'another' language and one among several or many in wider social, cultural, economic and political contexts of situated use. This is apparent within Europe and its different design schools and im/migrant populations, including in some settings large intakes of international students and in Master's programmes where English is the medium of learning. Many of our staff students are multi or polylingual yet language remains 'underaccented' as means and resources for realising and facilitating design learning more generally and, more pointedly, in terms of design, creativity, futures and change.

For many learners worldwide, in Africa and India for example, English is another or 'second' language, it being the formal medium of education, government and business, though in reality it is widely mixed in multilingual performance. In settings where English is a 'foreign' language, it does not have these sociolinguistic and language policy framings and this places different pressures on mixed language proficiency design classrooms with students from a great diversity of backgrounds and educational systems, as in our Master's and PhD classes.

Our design classrooms - physical, virtual and hybrid - are 'living language laboratories' (e.g. [Figure 3]) in which rich and diverse exchanges, but also where and cultural expressions and preparedness to connect language and designing may vary and be in need of careful support, facilitation and some guidance. Attending to words and discourses, multimodal design making and communicative performance in



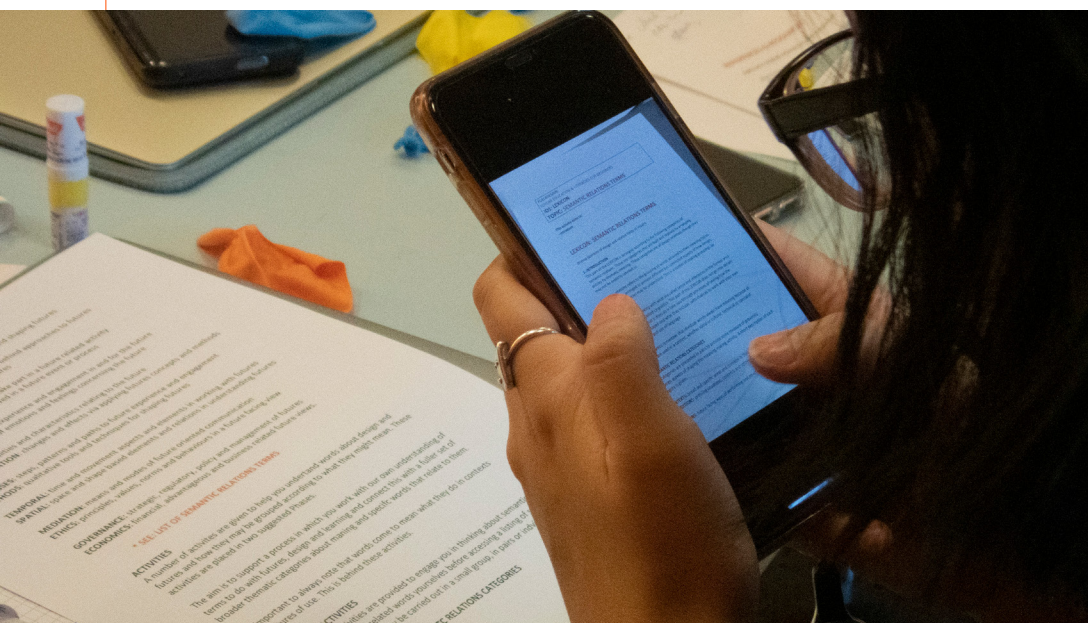
▲ **Figure 3**
The UNMAKER, designed for locative use on smart phones, part of the CURIOUS DEVICES section of the DESIGN FUTURES LEXICON. [Link](#) ▶

presentations and writing, demands additional attention and sensitivity to the learning processes and language production and criticality on the part of students. This is perhaps amplified more than we might acknowledge as design educators.

Plural and relational

The form of the LEXICON is different to dictionary type ones and the genre of glossaries. Typically these provide entities according to parts of speech and meta-summaries of meanings in domain areas and thematic contexts of application. These provide important resources to consult in working with existing language and futures resources. In addition to dictionary entries and summarial glosses of terms in use, the LEXICON is itself a plural interlinked relational design of different elements, genres and scales [Figure 4].

All language works with such relational aspects; the LEXICON, however, is based on a recognition that all language in design is connected to a mix of modes of designing, from haptic to visual, via prompts or scenarios. Words are connected to scales of inquiry and making, and to meaning that is generated above the unit of the sentence, that is as discourse. We focused on lexis as a means to working with concepts, positionality and learner designer's identities. We world with terms at different connected scales: single words, definitions, activities, tools, genres, mixed genre formats.



◀ **Figure 4**
PhD student looking up online definitions and comparing them with the Lexicon resource on Semantic Relations connected to the BALLUSION workshop, as part of an activity on working with meanings and design futures. AHQ, autumn, 2019. (Photo: Palak Dudani).

Futures languaging, languaging futures

We devised a corpus of terms, different words list in, with and without definitions, a set of core activities around new tools called ESSENTIALS and supported by a set of learning Units with activities that connect the uses of the Essential to design learning tasks, contexts, making and analysis. Further, 'cases' of related extended design use called RENDERS are included [Figure 5]. These give examples of how alternative - even tangential - experimental and contextual uses of the Lexicon may be accessed and appreciated as materials, situated resources in wording design and futures, and as articulation of a diversity of ways in which futures design words and their discursive articulation in design may be realised. In the LEXICON we draw on these elements and orient them 'futurewards' and back into the present.

LEXICON RESOURCES



▲ Figure 5

An overview of the DESIGN FUTURES LEXICON and its different parts. [Link](#) ▶

The 'composition' of the LEXICON - as content and process - entailed interrelational dynamic between a diversity of approaches and practices. These were drawn from domain knowledge areas that included design (Product, Interaction, Services, Systems, Strategic, Communication), the Humanities (narrative, film and media, environmental and digital humanities), Social Sciences (qualitative inquiry, ethnography, posthumanism, social semiotics, STS) and Learning Sciences (situated, learner-centred, action research), Digital/Media and Communication (interfaces, serious play, mediation), Anticipation Studies (scenarios, probes, provo- and proto-types) and Critical Applied Linguistics (Lexicography and Critical Discourse Analysis, English Language Teaching and Academic Communication and Rhetoric).

In these dynamics, the concept of articulation is central and has two related senses. Articulation refers to acts of voicing or enunciation. This importantly connects with key matters of whose language, whose expression and whose futures are being expressed. Articulation may refer to connections or relations between entities, literally and metaphorically, as fact and as ideas. It concerns providing learners with means and motivations to not just reflect on vocabularies and their semantic and world view inscriptions but to actively explore voice terms, formulations and expressions in relation to their own designing, learning and design projects.

As communicative, mediating artifacts designs are products and processes, such enunciation is a weave of the cultural and communicative, technical and systemic. In and between all these dimensions, words are signifiers of world views [[-> SEE POSITIONING – IO2: FUTURE PHILOSOPHICAL PILLS](#)]. They function as markers of preferences and assumptions. It is through the nesting and circulation of the weave of words and the discourse in and through which they operate that values, arguments and predominant perspectives and enactments of power and possibility are realised. These are communicative and mediated socio-material realisations of our human capacities and proclivities to position pervasive reproductions of values and preferred world views, policies and memberships.

As whole the LEXICON supports students in focusing on terms and their selections, application and generation. It does so to probe and unpack, assess and critically situate relations of world views, design domain knowledge and processes and methods, such as in untangling and reframing predominant approaches to Product-Service-Systems within participants' own anticipatory designing and critical reflections.

How was the DESIGN FUTURES LEXICON developed?

Developmental, imaginative, generative

The LEXICON has been designed, developed, crafted and implemented through a diversity of related activities, design and research practices and approaches. It draws on co-design and participatory ethnographic and qualitative inquiry practices. These are linked with enactment of playful, game-informed and emergent design dynamics of interaction and communication design. The Lexicon draws on bottom-up, situated engagement with process of lexical and discourse in contexts of use, in design, in futures studies, in digital media and especially in online and e-learning dynamics.

In summary the LEXICON is built through developmental, agglutinative or sticky and contextual inter-relations while it itself has been a work in progress that is generative, compilation and critical. In design research and educational terms it is thus centred in reflexive, recursively relational post/decolonial pragmatics while seeking to engage in imaginative, explorative and critical design centred pedagogies. These are pedagogies that have toggled between the physical and the digital, drawn on interaction and e-learning experience and practices in working with malleable materials and emergent processes.

Building a vocabulary, shaping a 'corpus'

The LEXICON is built on the backbone of a corpus of 450 futures facing terms identified over a 5 year period drawn from design education and research. This corpus has been infused with multidisciplinary perspectives and experience in working within and across design domains and the human sciences, from design fiction to the computational.

Critical Applied Linguistics methods have been taken up in shaping this corpus in including terms from a diversity of disciplines, domains and practices working with

futures more broadly, spanning design, Futures Studies and digital/media, electronic arts, culture, sustainability and systems oriented designing. Adopting a relational view of knowing and designing as contributing to means of becoming not only being, the Lexicon draws on the pragmatics of Critical Applied Linguistics and pedagogies derived from Critical Language Awareness, amongst others.

The corpus was also arranged around a set of core futures facing semantic categories, where meaning making is always more fully realised in contexts of productive use. Selections of the 450 words were made through a mesh of ethnographically framed participation, which included inputs from the design and development team, Master's and PhD students in design, colleagues in design education and research, colleagues working in related fields, through reference to other lexicons and glossaries, projects and networks working with futures vocabularies, encompassing consultation of online corpora (see list on Lexicons below). These terms, as our FUTURE PHILOSOPHICAL PILLS points to, are needing to be clarified and positioned in terms of the world views they convey and within which they are located and circulated. From what we labelled 450 FUTURES DESIGN WORDS, a list of 250 FUTURES DESIGN WORDS was then specified to help further establish the semantic categories and their dynamic relational capacities are a set of core items design students might be able to work with. With this set in place, we sought to produce a more workable core of 50 DESIGN FUTURES WORDS.

Words alive

Items on the list were arrived at through different specialists, students, professionals and researchers contributing their preferences and engaging with the list in an emerging practice of experimental use. The final list was then established and taken up further in workshops, in relation to projects and as a frame within which to try to encapsulate a set of generic definitions. These definitions were also written wholly afresh. This was done by the project and LEXICON leader with editing and revision suggested by the LEXICON co-developer and researcher and with revisions in use.

Our generic definitions were also devised through reference to online dictionaries and historical and etymological scope and language functions in terms of parts of speech. Together, these aspects informed the wording of the dictionaries, including consultation on specific corpus-based lexicality of the COLLIN/COBUILD dictionary. The project leader had skills in collaborative educational language teaching, development and research in corpus-based student directed 'second' language English academic learning.

The DESIGN FUTURES LEXICON addresses these matters by way of the shared development and cumulative gathering of inputs from design students, teachers and researchers from the Oslo School of Architecture and Design and FUEL4DESIGN project partner institutions. The LEXICON builds a bottom-up vocabulary based in projects and connected to readings and students' seminars, workshops and studios. It is located in existing design pedagogies but reaches beyond it into shaping DESIGN FUTURES LITERACIES in and through use.

Reframing Lexis, Discourse, Design and Futures Learning

BY Andrew Morrison

On language-discourse

Relations between design, language and futures have tended to remain in the background in explorations of design and the prospective. Design education and analysis do attend to the role of 'language' and domains, such as the language of graphic design. Attention has been given to the relations of design and rhetoric (Buchanan, 2001) and products and semiosis, such as in the work of Krippendorff.

In the past decade, making and analysis in practice-based research have been crafted between interaction design and social semiotics, such as by Eikenes (2010) and Hansen (2014).

Recently, interest in the materialities, mediations and discursive in practice-based interaction design as 'discursive design' (e.g. Morrison et al., 2011), has been taken up in regard to product design (Tharp & Tharp, 2019). While focus is given on the language of design – from aesthetics to programming

in interaction – little attention connect the material semiotic processes of designing with studies of Critical Linguistics and Critical Discourse Analysis.

These fields have their origins in attention to power, position and enunciation of perspectives, shifting from early specific verbal language approaches in Critical Linguistics, extending to feminist studies (e.g. Cameron (1982) and language and power (Fairclough, 1989) and discourse and social change (Fairclough, 1992a), including gender, migration and nationalism (Wodak, 2011), an emphasis on situated studies in Critical Discourse Analysis (Wodak, 2013).

Based on Halliday's Systemic Functionalist Linguistics and its meaning making in context (Halliday 1978; Halliday 1985), Critical Discourse Analysis looked at relations of language and power and communicative and performative aspects of the study of language above the unit of the sentence.

This included attention to lexis in discourse relations within across and between texts, and specialist and popular semantic framing and layering in genres of written and spoken discourse, amongst others.

Interest in situated meaning making, still with a logo-centric base, was extended to verbal-visual analysis (Kress & van Leeuwen, 1996). Consequently, with interest in wider mediated meaning making, applied critical discourse studies extended to multimodal discourse analysis (Kress, 2010), methods and multimodal discourse analysis and related pedagogical initiatives in the domain of Critical Language Awareness (Fairclough, 1992b).

For Janks and Ivanič, (1992), this was much about the transformative and emancipatory in developing critical literacies in action.

Critical Applied Linguistics

At the core of the Lexicon is an interplay of language, design, learning and mediation. It is centred in Critical Applied Linguistics and its focus on context, performance and processes in situated meaning making. Over the past 40 years, this includes work in critical linguistics and critical discourse analysis, critical literacies and critical language awareness that has shifted from neo-Marxist frameworks in the 1980s to more relational and posthumanist ones in recent years.

Drawing on the work of Janks (2000), Pennycook (2021: 23–24) demarcates ‘Five Ds of Critical Work’ in Critical Applied Linguistics: 1) Domination – Contingent and contextual effects of power; 2) Disparity – Inequitable access to material and cultural goods, 3) Discrimination – Ideological and discursive frames of exclusion, 4) Difference – Social and cultural distinctions, and 5) Desire – Operations of ideology, agency, identity, and transformation.

Pennycook (2021: 156) further outlines ‘Five Elements of Critical Applied Linguistic Research’. Questioning difference includes how it’s constructed and why it matters. Participants’ worldviews are seen as situated and to be recognised. Issues of power entails matters of knowledge and research topics. Diverse perspectives include being open to alternative and Southern views. Transformative agendas are realised via dynamic goals and meaning making.

These elements all point to a dynamic Critical Applied Linguistics that questions its normative assumptions and facilitates greater inclusivity and diversity, equity and social justice and through their intersections opens out to new questions and potentials (Pennycook, 2021: 38).

Critical Language Awareness (CLA)

Janks (1993), colleagues and students working in the context of oppositional pedagogies in the context of apartheid South Africa, paid special attention to situated matters and local materialities of the uses and effects of language and power. This was manifested in a series of booklets. These were developed to facilitate critical awareness of the roles of language in shaping and perpetuating and changing social and political equality and were centre stage in facilitating deep change.

Janks (2000) drew this work from practice, including play and pleasure (e.g. Cook, 2000), into theory, devising a four-parts synthetic frame for critical literacy based on domination, access, diversity and design. This she took forward into further theorising critical language awareness, literacy and power (Janks, 2010). Attention to the enactment of critical literacies, spanning words and images, has been continued into further resources for teachers and students (e.g. Janks, et al., 2014). For Janks (2014: 291), ‘Critical literacy is as much about “reading” our daily encounters with others as it is about reading our own behavior and reactions.’

Multimodal Discourse Analysis

Relations between words, language, and discourse especially in English has mushroomed in the past three decades, with the extensive growth of multimodal discourse analysis (Kress, 2010). In essence, still located in a logo-centric socio-semiotic frame drawn from the situated Systemic Functional Linguistics of Halliday, work was extended to studies of a diversity of modes and mediations (e.g., Morrison 2010), including movement, visibility, haptics and space. In each of these applied studies of multimodality have been paramount with

close attention to languaging and mediated meaning making and action (Norris & Jones, 2005), including methods and data (e.g. Norris, 2019). Rarely, however, has Design featured in these discourses with their publication geared towards linguistics and education domains of pedagogy and research.

Creativity, language and design

These developments in Critical Applied Linguistics have seldom turned to Design, though curriculum design and language teaching materials design are addressed. Interest has extended, however, to matters of language and creativity (Jones, 2011, 2015) and, for example, design and locative fiction (Morrison et al., 2011).

Jones and Richards (2015b) outline key relations between language and creativity. Creativity is seen as central to effective, successful and specifically transformative language teaching and learning, as product and as process, social and collaborative. It has shifted from origins in the literary and poetic, and extends to using language in problem solving, to that of saying something new (Tin, 2013), positioning views and persuading others in situated contexts of purposive action, including remixing and refashioning (Jones & Richards, 2015b). Facilitating agency and articulation on the part of educators and students is central. This too is connected to focus on relations between language, learning and media (Jones et al., 2020) and more specifically digital media, digital literacies (Jones & Hafner, 2021) and digital discourse (Thurlow & Mroczek, 2011). Attention is also given to productive uses of language and social media in situated, locative and digitally mediated meaning making (e.g. Jones, 2022). Jones has been central to the articulation of these extended views of discourse in action, practice-based studies and guides

and critical analysis. He reminds us that we need to be mindful in working with digital literacies and language that the tools we use not only shape us and our mediated meaning making but that what he calls skills are always being shaped in relation to contexts and to our individual and collective engagement (Jones, 2021c).

Connecting language, learning, mediation and design is seldom featured in publications on the creative industries sector or even design education; nor is design central to the numerous publications on multimodality, language and mediated learning. Design education, in short, stands outside education in language and in media and in education. We suggest this is due to the legacy of design and a productive art and linked with pragmatist notions and practices of knowledge building and exchange in the professions.

Two indicative publications from within design focus on working with language in design learning. In *Limited Language: Rewriting design*, Davies and Parrinder (2010) investigated processes of shaping relations between the visual and verbal in and as writing, through juxtaposed texts to explore how web-based media might be used in innovative, communicative ways to communicate design in the context of cut-and-paste, remix and rapid 'feedback' visual culture. Attention is given to ways the verbal effects the visual in contexts and directed and serendipitous and migratory and reflexive digital-print mediation of creative processes.

In *Verbalising the Visual*, Clarke (2019) provides an introductory general resource for design pedagogy. His text centres on visual-verbal relations and ways these are transposed, translated and transmediated in examining and elaborating on relationships between artifacts, language and meaning.

The core aim is to inform and facilitate language based critical assessments of visual culture, in oral and written forms, in the domains of design and art.

Language and futures

Beginning in the later 1980s, the digital technologies of gathering, archiving, sorting and mediating language data have been central to the development of Applied Linguistics and language teaching. Drawing on practices of corpus linguistics (e.g. Sinclair, 1987) and principles of data-driven learning established by Johns (1991), learners, teachers and researchers have been able to parse texts, study concordances and look to patterns and occurrences of lexis - or collocations - in contexts of their use and origin. This has transformed the study of language and allowed us to move away from lexicographic methods originating in and print-based forms. Added to offline corpora of naturally occurring print and spoken language, the Web now offers an expansive digitally mediated communication in which language is continuing to emerge and evolve. To this is added the role of AI systems and natural language processing practises in shaping conceptualisations and 'readings' of futures (e.g. Kehl, et al., 2019). However, seldom are relations between language, design and futures studied.

One outstanding sociologically centred work, by Adam and Grove (2007) explores conceptual relations between action, knowledge and ethics. Attending to how words are used to conceptualise time, the text is arranged thematically around the future as being imagined and made through actions of relating, reconnecting, embedding, embracing and embodying (Adam & Grove, 2007: 190). How to work with and understand the future as a mode of concern and care is framed through the

devices of the future being told, tamed, traded, transformed, traversed, though, tended and transcended [[→ SEE Essay 1: Anticipatory Design Literacies, Volume 2](#)].

Language, ecology, posthumanism

Drawing on Computer Assisted Learning perspectives, Stibbe (2015) has been central to the development of 'ecolinguistics'. For Stibbe (2021; 203) 'Ecolinguistics is the study of the role of language in the life-sustaining interactions of humans with other species and the physical environment.' His core concern has been to explore ways linguistics may be put into play in reinventing society on ecological lines in conjunction with related attention to ecological issues and ecosophical approaches. His approach, including his updated book (Stibbe, 2021) and companion educational website and resources ([Link ↗](#)), focuses on how enact stories in the world through language and to use language affordances to tell new stories to live by and to become critically discerning about them and the care they enact for ourselves and the environment. This includes attention to elements and mixes of nine story forms: ideologies, frames, metaphors, evaluations, identities, convictions, erasures and salience (prominence; Stibbe 2021: 16).

Multiple voices are needed in pursuit of tasks on re-articulating the world towards ethics, transition and deep adaptation, with greater inclusion, says Stibbe, of experience and expertise of traditional and indigenous cultures across the world. In his second edition, Stibbe (2021) also address the pandemic as part of his ecolinguistics and argues that in the pre-pandemic world we generated stories that contributed to inequality and global collapse in an industrial frame with growth, profit and accumulation eroding ecological justice and survival. In contrast, he extends his work to argue that

different 'non-normal' narratives, including inspirational language, are needed that also include the non-human (Deep Ecology). In this, language is considered not only in terms of social contexts of production and use, but 'in the contexts of the wider ecosystems that life depends on' (Stibbe, 2021: 203) and its cultural repositioning such as in its Chinese ecosophical articulation in a mode of 'Harmonious Discourse Analysis' (Huang & Zhao, 2021).

This focus on relations of ecology and humans and non-humans is also central to what Pennycook (2018) labels Posthumanist Applied Linguistics. In motivating for a critical applied linguistics commons, Pennycook argues that we can resist human centric pedagogies and assumptions and attend to different relations between text, critique and practice in the context of wider non-human materialities. He also supports endeavours to 'queer' our representational and mediational practices as means to other ways of knowing and a need to disengage from assumed discourses and practices of neoliberalism and critique the role language has in their perpetuation and to frame instead a politics of the commons with posthumanist applied linguistics (Pennycook, 2018: 143). This needs to extend, he mentions, to indigenous knowledge systems, translanguaging and decolonising the discipline. For Pennycook (2018: 144), 'A critical posthumanist applied linguistics seeks to unravel the ways in which language has been bound up with human exceptionalism and to open up alternative ways of understanding language in relation to people, place, power and possibility.'

Decolonising Critical Applied Linguistics

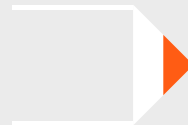
Along with the global study of English, so too has interest grown in multilingualism and wider decolonial politics of unpacking

power relations on language, globalisation, education, learners' expression and agency. This may be understood in terms of language, learning and literacies in a mode of social action, ranging from the sociolinguistics to language curriculum and learning in materials design and use. It also pays attention to people and languages that have been relegated to the margins and co-opted into prevailing paradigms of power or preferred positionalities. In the development of counternarratives and more equitable language policies and practices, what is central is the recognition of language variety and diversity together with pluri-lingual repertoires of co-construction and motivated exchange. Further, learning often happens outside of institutional and classroom or studio settings: it may be experienced and enunciated in a mix of formal and informal language and languages, as well as and between words, registers and discourses and as part of wider cultural generation and re-appropriation. In these processes – despite their decolonising character in displacing and re-orienting relations of language, power, addressivity and context-language futures are largely under-addressed. Where in terms of non-western frames might design futures literacies find and respectfully take up words and terms and their world views in contributing to a wider a diverse ecology of futures concepts and perspectives?

In framing design language futures as unfolding, adaptive and critical, we might do well to heed key developments in decolonising language in mode of wording and discursive but also in terms of knowledges and epistemes (Deumert, et al., 2019). Here we need to attend yet again to literacies and the role language plays in their socio-material practices beyond the written and the spoken. Literacies have undeniably been exercised as colonial and

bureaucratic models of power and control, through a range of devices and decrees and through policies and practices; today, as we ask whose futures we are teaching and learning towards, we cannot but face matters of language, power, position and prospect. This is a highly contested still to be realised space and discursive arena to be continued to be filled with words and images, space and motion, touch, smell and taste, sensing and embodying, enacting and positioning in the interplay of the human, ecological and artificial. Language writes code and code is graphic, whether biological or neurological, advertorial or algorithmic.

In the past two decades, studies on multimodal and critical discourse have grown in languages other than English, such as in Brazil (Pardo, 2010; Resende, 2010), and have in part been connected to wider matters of Critical Applied Linguistics looking to decolonising language (Pennycook, 2021). This has centred on perspectives from the 'global south' (e.g. Makalela, 2018). This is seen to entail reconceptualising Applied Linguistics itself, language education, translation and assessment practices, language and work and policy more broadly (e.g. Pennycook & Makoni, 2020: 136–137) and decolonising studies in Critical Discourse (Resende, 2021). Part of such change lies in the approach to translingualism and related creativity that are embedded in language and cultural activities and the very notion of language itself we hold and its relation to agency and identity on the part of learners (Jones, 2020; [→ SEE our TRANSLEXER device in the final essay in this Volume entitled **Learning Futures Design Otherwise**]).



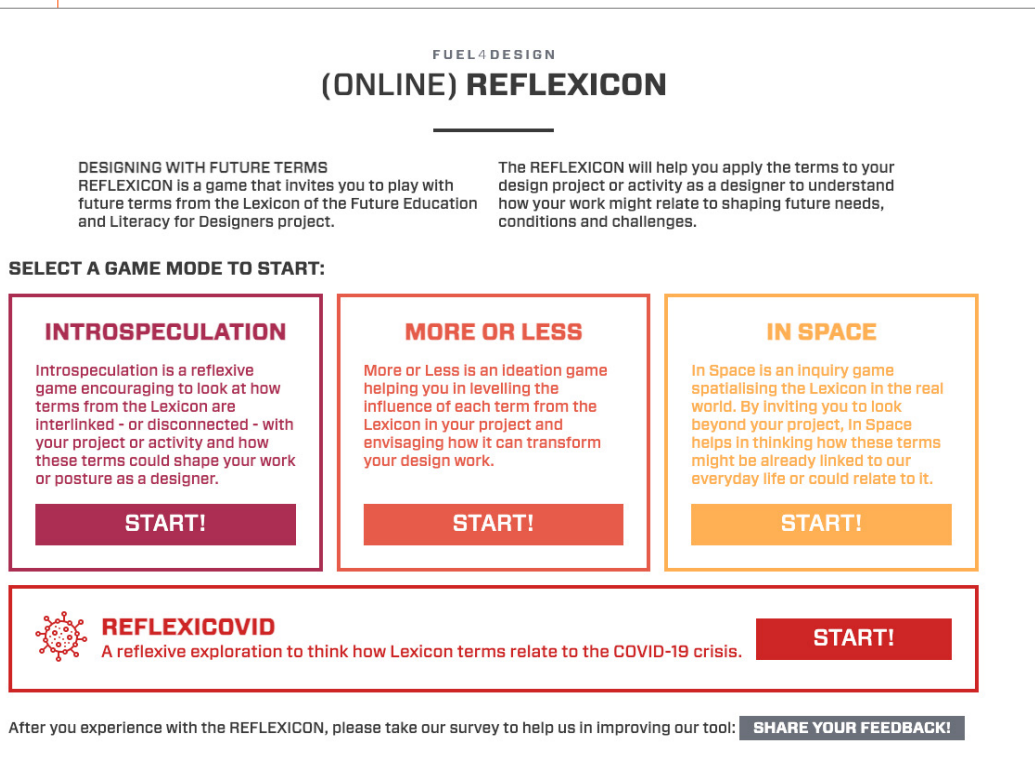
New tools for tough times

The LEXICON is comprised of wholly new tools and learning resources to support them [Figure 6]. These tools were also designed to offer a diversity of means to address complex issues and contexts of learning to design in the context of the Anthropocene, entailing climate change and the COVID-19 pandemic.

The tools were discussed and developed with qualitative researchers, with media, technology and human science educators and in relation to practising design educators and researchers. They were put into public debate in workshops and in ongoing dialogues with PhD research students in futures in particular working within the wider project and in related doctoral studies in the context of the AHO sub-project host. The tools also benefitted from PhD Fellows at AHO working in systems, services, futures and interaction design, including attention to tools development and uses.

Work with the project's web developer and through a related funded project, *Amphibious Trilogies* were able to develop generative software tools to transverse the specific focus and to be applied elsewhere in the project [→ SEE [Essay 1: Anticipatory Design Literacies](#); → SEE [PHILOSOPHICAL PILLS generator](#)].

Working with a professional design company, CASUS LUDI (concerned with futures designing, speculative inquiry, contextual games and design fiction), brought specific professional and practice based expertise and knowledge exchange into the project.



◀ **Figure 6**
An overview of the
DESIGN FUTURES LEXICON
and its different parts.
[Link ↗](#)

Figure 7 ▶
50 FUTURES DESIGN WORDS
WITH DEFINITIONS. [Link ↗](#)

Selections & examples

ESSENTIAL CATEGORY: KEY WORDS

Notions, concepts and framings of the future are conveyed through the words we inherit, select, tweak, discard and generate. For designers, students, teachers and researchers these words may come to us through a variety of sources, practices and channels. We need to be aware of their origins, circulation and the uses to which they are put.

This part of the LEXICON presents a set of KEY WORDS in English that have been gathered and patterned as resources to think and work with in shaping futures by design. The KEYWORDS are present as alphabetical lists, with and without definitions, in sets of 50, 250 and 450. This allows us to see the words in different scales. These scales may be used to limit an approach or to specify specific terms according to uses, such as via briefs/tasks/deliveries, whether in a studio course or when preparing a term paper/presentation or thesis.

DESIGN FUTURES LEXICON ESSENTIALS



50 FUTURES DESIGN WORDS

WITH DEFINITIONS

These 50 words point to key terms and concepts curated for design students and designer-researchers learning how to engage in making, shaping and critiquing **FUTURES DESIGN** and **DESIGN FUTURE LITERACIES**. The 50 words are connected to a range of activities covered in the **UNITS**. They are a resource to consult in learning via briefs/tasks/deliveries, whether in a studio course or when preparing term paper/presentation or thesis. The definitions are not meant to be exhaustive or hard and fast rules; they need to be related to contexts and communicative purposes and enactments.

1. AGENCY

The energy, force and power a design centred person, group, persona or organisation, or an entity, tool or system, enacts to realise its intentions, goals and potentials in context and settings that matters to its' future survival, character and dynamics to make for its motivation, inspiration, vibrancy and vitality in shaping futures.

2. ALLURE

To attract, charm, tempt, draw in, entice, appeal or fascinate a person or thing to take a course of action, participate or engage with a design, artifact, process or view, a pull towards what it 'might be', desire for something that doesn't exist, creating conditions and opportunities for something 'else' to begin happening.

The definitions have been kept deliberately brief and do not have dictionary-like mark-ups (as we can look them up in a variety of formal sources). The definitions are all newly written so as to be open to reworking and refocusing in use. They are thus not meant to be exhaustive or prescriptive [Figure 7].

The terms are ‘futures facing’ ones and they need to be related to contexts and communicative purposes and enactments. An example of this is a set of FUTURES DESIGN MOVEMENT WORDS developed in conjunction with a choreographer. The related UNITS listed in each of the different sub parts of KEY WORDS accentuate that words are not neutral, that they have historical and situated resonances and assumptions and that we need to work with their semiosis, or meaning making, in regards to cultures and context, embodiment and lexis [→ SEE FEATURE 2]. KEY WORDS are taken up in 1) activities covered under specific THEMES & UNITS and 2) different CURIOUS DEVICES.

ESSENTIAL CATEGORY: META MATTERS

This category includes texts and activities that cover core orientations and concerns to do with design, futures, learning and language. Included is attention to positionality and criticality, to a situated view on the roles of futures design in futures design literacies and the parts that futures vocabularies may have shaping design futures and our shared literacies in enacting them with care and towards long-term sustainable futures.

→ Focus on FRAMES 4 FUTURES

FRAMES 4 FUTURES and its related activities and tools (e.g. WORD-O-MAP) invite participants to think about four distinct categories through which to consider, identify, name and ‘map’ the issues, phenomena, situations, systems and word views within which we live, work and play, along with their short and long-term futures. The core categories are Context, Conditions, Complexity and Contexts. First, students are asked to add words of their own to these categories in the form of a quadrant and to connect them to the purposes and tasks in their own learning, whether in relation to a small task or a larger project. The aim is for students to situate, position, ‘plot’ and label their own work and own readings of it in relation to the categories. They may then compare this to FRAMES FILLED that has been filled by the designer-teachers with items from the wider lists of futures words in the LEXICON and to compare their own ‘mapping’ with words and definitions in the lists of terms. FRAMES FOLDED offers a digital and print-based three-dimensional activity in which they elaborate on a project of their choice through writing a summary, key issues, definitions and orientations (that may include photos and drawings), with the final sheet printed and folded and compiled into a mobile of student projects for display, discussion and to suspend the Framing in a public space.

ESSENTIAL CATEGORY: LANGUAGE TOOLS

→ Focus on DISCOURSE MOVES

This category provides further material on relations between language at the level of the word (lexis) with that or larger patterns or moves in how larger texts are shaped and realised within world views as discourse. The concepts and realisation of Discourse

Moves (such as proposing, contrasting) is introduced. Discourse moves apply to spoken or written forms in which we communicate. Many presentations of design work use these moves to structure what is being described and communicated. This may involve a design process or an artifact. Similarly, writing about design – a Master's term paper or thesis, or in a design-research conference paper article, thesis chapter or thesis overview – make use of such discourse moves. Broad discourse moves allow us to also see what the many design futures words we use and encounter may be understood to be doing, or performing, in shaping meaning. This can be in describing, explaining or interpreting a piece of design communication. Items from the LISTS OF FUTURES WORDS are also mapped onto these Moves to draw attention to the work a moves do through specific futures vocabulary items; these items need to be situated in the context and purpose of communication, in relation to their positionality and criticality too. Here, focus on gerunds or '-ing' forms pays attention to the doing of futures design work, things, artifacts and developments and terms that may indicate the roles of processes, activities and dynamics in shaping futures.

→ Focus on SEMANTIC CATEGORIES

Semantics is a formal part of Applied Linguistics that refers to relations of Sense (or meaning) or sense and their Reference (or contexts of occurrence, use or contest). In the LEXICON our focus on SEMANTIC CATEGORIES is to provide some sense of how words may be sorted for their Sense and Reference relations, though these will always depend on the context of designing in play or being analysed in a product, system, service or interaction [Figure 8]. A set of categories is suggested as a means to sorting the possible, potential, actual and proposed meanings we might ascribe to certain terms or words in context. These will necessarily also be defined in terms of the world views, genres and multimodal relations within which they are being taken up, positioned and communicated. The Semantic Categories were developed through sorting the 450 Design Futures terms as well as in relation to established ones, generating a novel Design Futures resources for dynamic use and alteration.

ESSENTIAL CATEGORY: CURIOUS DEVICES

CURIOUS DEVICES is the name we gave to an additional set of new tools and techniques freshly developed for FUEL4DESIGN. They took form through work-in-progress in the life of the world package but more explicitly due to the pivot to online learning in the pandemic. 'Curious' is included to reference the need for and hopefully also practices that might support ways to learn differently, in unexpected, playful and perhaps unimagined ways. 'Serious play', meaning connecting criticality with environments via ludic systems and activities (Flanagan 2009), is taken up as an underlying pedagogical mode.

This is embedded, for example, in the device CHIMERA that randomly generates words and groups of words to inspire students to rethink and create words and relations between them in working with design and futures and enacting and articulating their own agency in situated learning and building futures design specific vocabularies [Figure 9]; (see CHIMERA in **Essay 3: Sustainability, Systems & Learning Design Futures**). One students commented that, 'I liked a lot also the Chimera, I think it would

Form Giving, Shaping Futures Vocabularies

TEXT EXTRACT EDITED FROM:

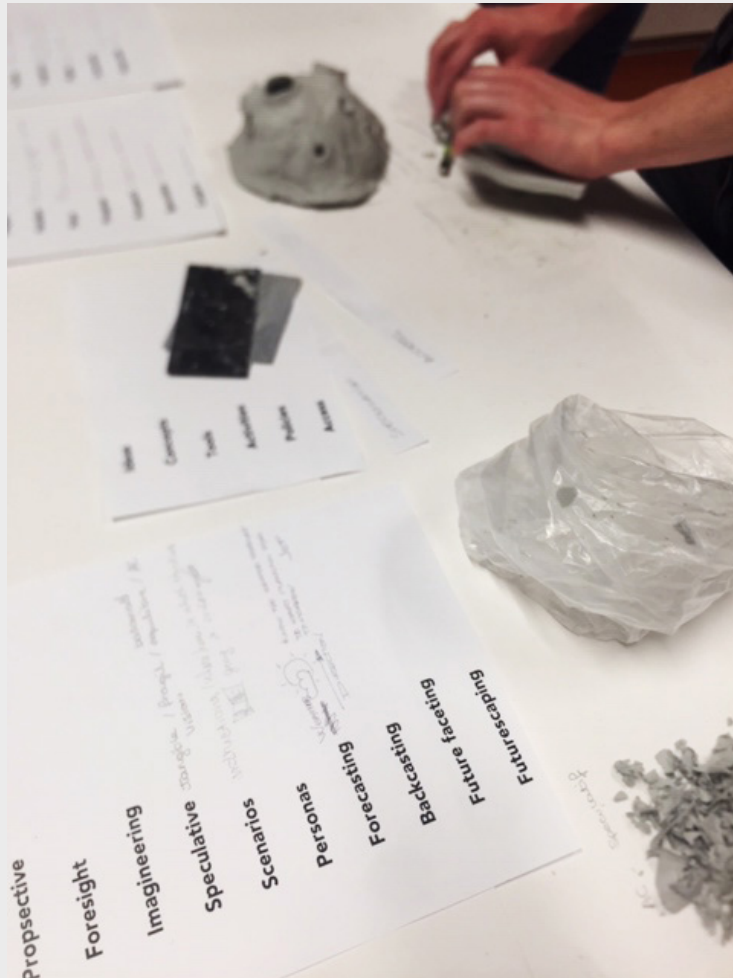
Morrison, A., Bjørnstad, N., Martinussen, N., Johansen, B., Kerspern, B. & Dudani, P. (2020). 'Lexicons, literacies and design futures'. Morrison, A. & Cleriès, L. (Eds.). 'Design Futures Now: Literacies & Making'. Special Issue *Temes de Disseny*, 36. (Open access). [Link](#) »

In the workshop, students were invited to engage in a process of exploring sets of terms drawn from the Lexicon to connect in the clay abstract form giving activity. Working in pairs, then in groups, students were asked to form associations with their design studies, product design, futures and abstract forms. Items from the Lexicon provided additional prompts to those mentioned above: students now related and discussed their own associations, experiences and ideas prior to shifting into work in a 3D haptic mode, mostly quietly, and then later largely in silence in developing abstract forms in clay. As can be seen in Figures 1 and 2, these processes included working with given lists of words, pens and notes and a large table top surface covered in paper for note making, drawing and positioning work in progress. As can be seen in Figures 1 and 2, a dynamic relationship developed over the course

of encountering the terms, discussing them, working with large lumps of clay and shifting to the shaping of individual forms by each student. As this emerged, the two educator-researchers circulated and further discussed the notions of tags, the types of abstract terms that had been revealed in the earlier prompts and their relation to each student's work. Next, students worked with deeper concentration on a second artifact to realise a fully formed abstract form of their own. As these came into being, there was further discussion on associations, connections to the terms from the lexicon and, importantly, the qualities of abstractness.

Here, the 3D form teacher took on stronger direction of the process and gathered all the student works for a plenary session in which the presentation of each work followed, along with reference to related lexical items that had also been presented in list form and then cut up by the students into singular items, with the teacher presenting her reading of the artifacts. In this activity, she revealed to students different categorisations, associative groupings and potential taxonomies for reading form language, drawing on the work of Anker-Kohler.





▲ Figures 1 & 2

Shaping relations between futures terms and form-giving, Master's students, AH0, autumn 2019. (Photos: Andrew Morrison).

DESIGN FUTURES LEXICON ESSENTIALS

≡

TABLE OF SEMANTIC CATEGORIES

LIST WITH WORDS

The main categories of semantic relations are presented below together with sets of words. Some terms may appear in more than one category. You can see all the words without categories: [250 FUTURES DESIGN WORDS](#)

CONTEXTS	CONDITIONS
<i>broad and specific areas and domains in thematising futures</i>	<i>Pressing situations, concerns and settings about the future</i>
anthropocene arctic change climate ecological global holistic pluralistic resources structural	catastrophe challenge degrowth development disaster emergency need opportunity ownership prospect

◀ **Figure 8**
SEMANTIC CATEGORIES resources may be taken up as prompts to placing and sorting terms that are given and encountered in design tasks and activities. [Link ↗](#)

PLURALITY-HOOD

Define this word and imagine how it plays a role in designing futures.

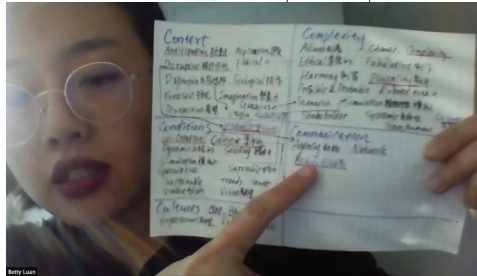
↻ GENERATE A NEW WORD

◀ **Figure 9**
Example of a machine rendered term from the CHIMERA, part of the CURIOUS DEVICES in The DESIGN FUTURES LEXICON.

be amazing to have an online version where keywords are inserted by the user and suddenly randomly scrambled by the software.’

Similarly, SURPRISING FUTURES DESIGN WORDS, drawn up by project members and PhD students, suggests that playful, quirky and unexpected and unwieldy words can be taken up as material to think further into how words come into being, and might be used to convey ideas, experiences and processes [Figures 10–11]; → SEE also the NEOLOGISER and related Unit 8.2. [Link ↗](#)).

Figures 10 & 11 ►▼
Early Zoom session on working with the NEOLOGISER under the section ESSENTIALS and connecting to FRAMES 4 FUTURES under the section META MATTERS. (Photos: Palak Dudani).



zoom.us Meeting View Edit Window Help

PhD workshop #3 (20.03.2020) X 6.2. NEOLOGISER - Google Doc... X 6.2. NEOLOGISER - Google Doc... X

docs.google.com/document/d/15hWvBOJ4CBupza1CJWpArFqXOE... ☆

6.2. NEOLOGISER Request edit access

File Edit View Tools Help

2. HOW TO MAKE NEW WORDS

We use the general actions listed below to make new words:

ACTION	DESCRIPTION
JOIN	Compounding: joining two words together (e.g. Facebook)
MIX	Blending: parts of words are joined
TRIM	A word simply can be made shorter and it's generally understood what it refers to. Back Formation refers to trimming of something from a larger word to a smaller one, e.g. telephone to phone.
LOAN	We borrow or loan and reposition: words for items we use, like and circulate.
SWITCH	Words from one part of speech can change their use function and become another part of speech (noun to verb for example, e.g. Google to googling)

gh building acronyms. This is when we create a the first letters of a set of words (e.g. EU).

OR FUTURES DESIGN

terms that embody or capture aspects of work with

ur name to your term.

inition for each term.

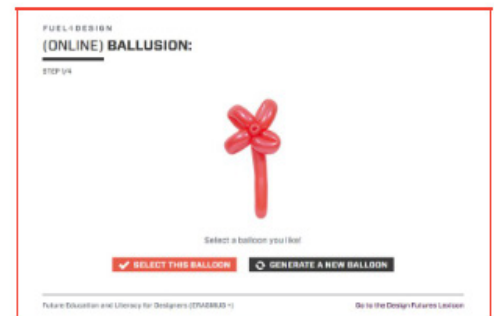


Figures 12-16 ►▼
PhD student looking up online definitions and comparing them with the Lexicon resource on Semantic Relations connected to the BALLUSION workshop, as part of an activity on working with meanings and design futures. AHO, autumn, 2019. (Photo: Palak Dudani).



Download the print version:

PRINT VERSION



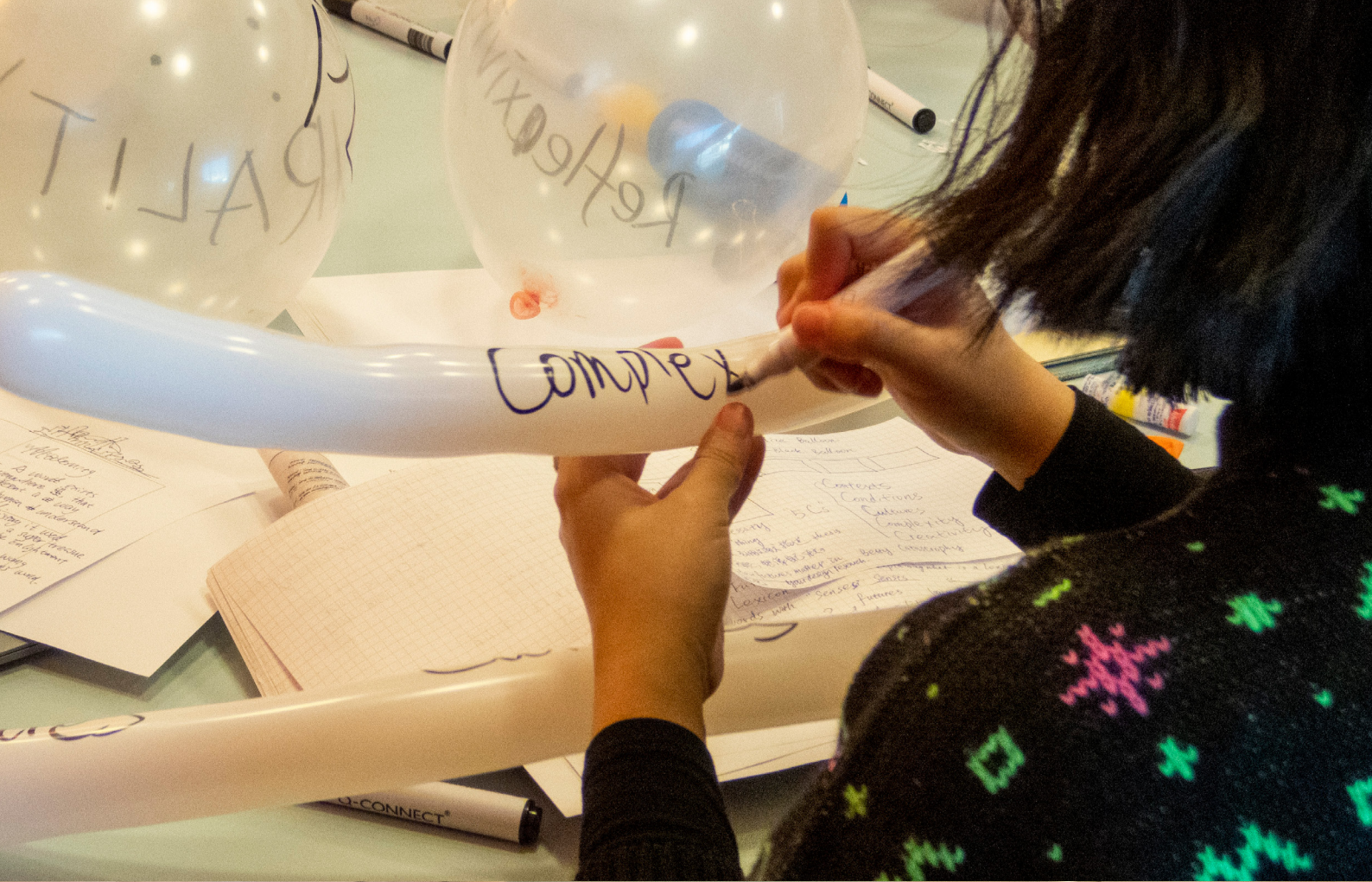
Access the digital version:

DIGITAL INTERACTIVE

→ Focus on BALLUSION

Building critical disciplinary, inter- and trans-disciplinary vocabularies and self-reflexive awareness of both language and literacies by design in working with futures is challenging. BALLUSION, makes use of party balloons to work with metaphor and language in supporting critical self-reflection on the part of Master's and doctoral students. It is available in physical and digital versions [Figure 12]. The aim is to draw attention to properties of design futures - fragility, tautness, malleability - and a need to develop critical awareness of how words may be selected and positioned within design projects and research. That terms carry assumptions, may be encountered randomly and are in need of constant critical surveillance to notice and position the views and values that are articulating is central.





Seemingly naïve, BALLUSION also asks students to work actively in discussing their ongoing practices of shaping and making meaning in situated ways and to work to burst illusion so projected and given futures so as to re-position working, active and critical vocabularies for making and critiquing design futures and their literacies and methods [[→ SEE Essay 8: Tools, Means and Mediating Design Futures Education, Volume 2](#)] including focus on metaphor]. BALLUSION also points to matters ideological in design, language, communication and futures. Students are also encouraged to heed the invidious and insidious nature of ways futures terms and futures policies and politics around design and change have undergone deep ideological contests in recent years.

In the physical version [[Figures 13–16](#)], students first inflate sausage shaped balloons while considering the futures-facing aspects of their projects and referring to the 50 FUTURES DESIGN WORDS write key terms onto their balloons. Discussion centres on the slipperiness, tensions and difficulties in making shapes in positioning their projects and relating them to concepts and terms in FRAMES FOR FUTURES.

Next, in pairs, students discuss their design or research projects. They then receive a balloon filled with 20 words from the List of 50 FUTURES DESIGN WORDS. Popping the balloon, they retrieve scattered items and work through to select 10 terms that relate to their project/s. Key framing words were written onto long shape balloons and then tied together. Discussion in PhD sessions is on placing selected terms to relation to the word views they are a part of and represent as shown in a session with a diversity of design based applied PhD projects at AHO. [[→ SEE BALLUSION and PhD workshop F2F mode, 20 May 2020. Link ↗](#)].

BALLUSION was also reconfigured in a digital version, a kind of ‘allusion’, that allows online users to work with randomly generated collections of terms and to work through similar activities as listed above. In terms of a more design and domain-specific use, BALLUSION was taken up online with a Service Design teacher-researcher Associate Professor Josina Vink and their Master’s students [[→ SEE a blog post that follows this presentation of the LEXICON Link ↗](#)].

In a more hybrid set of techniques and pedagogies, BALLUSION was also taken up with Master’s students in Choreography, in co-design with choreography Professor Amanda Seggell at the nearby Oslo National Academy of the Arts (KHIO). Here in a hybrid session asking students to create their own physical ‘balloons’, Zoom was used to conduct the activity, with reference to the online resources. In this activity the word sets were drawn from the list on DESIGN FUTURES MOVEMENT WORDS that had been co-developed with Amanda Steggell [[→ SEE Essay 8: Tools, Means and Mediating Design Futures Education, Volume 2](#)].

In these various activities, links are made with the PHILOSOPHICAL PILLS as a resource for engaging with the importance of positionality and criticality in the uses of terms in contexts and ways they may be redefined or re-articulated in studies that are driven by and located within concerns in and as design.

→ Focus on REFLEXICON

As part of the LEXICON a card game was developed to connect words to action and to the purposes of designing and design-research. The REFLEXICON re-uses card game-based codes to help explorations with the content or words of Lexicon in a reflexive way. 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.

Playing the REFLEXICON is itself is a reflexive, recursive and even diffractive 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.

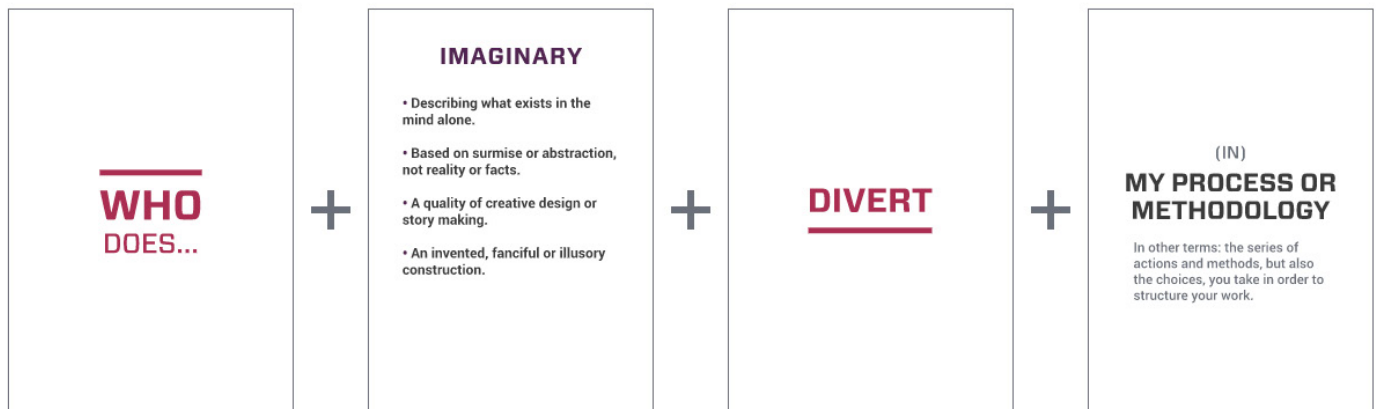
The three game modes allow one to reflect on how the DESIGN FUTURES LEXICON relates to one's own design practice. Each game mode [Figures 17–19] is based on a specific combination of cards formulating a reflexive hint. Players are invited to iterate on their responses and reflections by experimenting with new hints. In addition, REFLEXICON cards and rules are kept open enough to allow players to adapt the game experience to their work or to make and merge new uses of this playful tool [→ SEE Essay 8: Tools, Means and Mediating Design Futures, Volume 2].

(ONLINE) REFLEXICON: INTROSPECTION

SWITCH GAME MODE

A reflexive game encouraging to look at how terms from the Lexicon are interlinked - or disconnected - with your project or activity and how these terms could shape your work or posture as a designer.

Reflect on the question generated and speculate on how it could be different. Iterate by reloading the combination to push the Introspection further. **(HIDE THE RULES)**



I need some help: [SEE THE VIDEO TUTORIAL](#)

I'm done with the REFLEXICON: [I SHARE MY FEEDBACK!](#)

▲ Figures 17–19

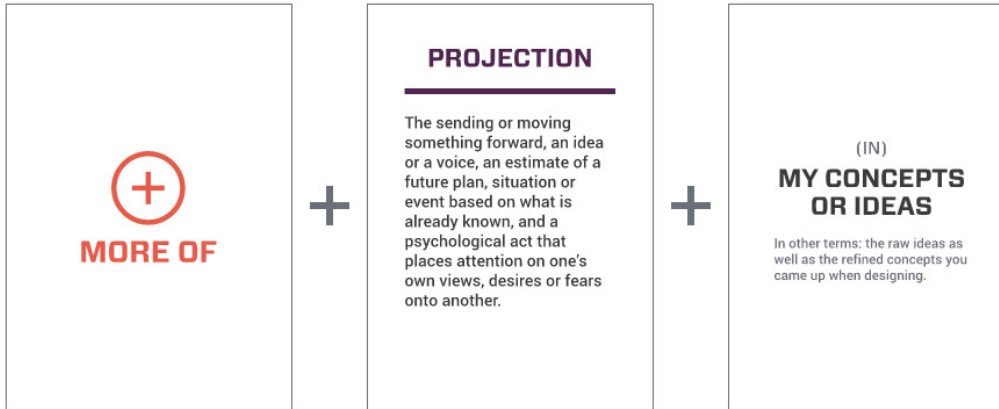
Three different modes illustrated in the digital version of the REFLEXICON, part of ESSENTIALS section of the DESIGN FUTURES LEXICON. [Link ↗](#)

(ONLINE) REFLEXICON: MORE OR LESS

[SWITCH GAME MODE](#)

An ideation game helping you in levelling the influence of each term from the Lexicon in your project and envisaging how it can transform your design work.

Imagine what more or less of this term might change for your practice or your work. **(HIDE THE RULES)**

[GENERATE A NEW COMBINATION](#)

I need some help: [SEE THE VIDEO TUTORIAL](#)

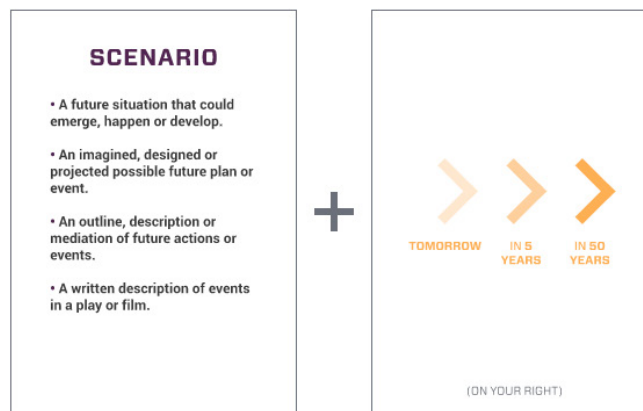
I'm done with the REFLEXICON: [I SHARE MY FEEDBACK!](#)

(ONLINE) REFLEXICON: IN SPACE

[SWITCH GAME MODE](#)

In Space is an inquiry game spatialising the Lexicon in the real world. By inviting you to look beyond your project, In Space helps in thinking how these terms might be already linked to our everyday life or could relate to it.

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. **(HIDE THE RULES)**

[GENERATE A NEW COMBINATION](#)

I need some help: [SEE THE VIDEO TUTORIAL](#)

I'm done with the REFLEXICON: [I SHARE MY FEEDBACK!](#)

The REFLEXICON has been used, for example, with two PhD settings, one local and one regional. The first was early into the pandemic at AHO in a PhD class. Second, it was taken up in the NORDES PhD Summer School [[→ SEE blog post for details and students' views.](#) [[→ SEE Link ↗](#)]. Select comments on the REFLEXICON by PhD students included:

I liked the provocative sense of it, at which oneself can reconsider his/her beliefs about particular notions.

These games are open enough to generate a lot of possibilities.

I like the attempt to do it digitally.

The randomic combination of cards, and new question that can stimulate the research.

The fact that it enlarges my lexicon and my cultural bag to look at an explore.

The change of perspective on some terms.

Definitions are hard..., and also precise writing, etc. It doesn't mean that I don't like it, but it is hard.

The fact of having predetermined words that in some cases came back too often.

Words are repeating themselves, I would like more diversity.

Some were impossible to answer to, as my research is still notarially defined.

I found several combinations of words that particularly stimulated my research, also reinforcing some thoughts.

The third mode I believe might need a bit more clarification in terms of why we do have different versions of the arrows (Tomorrow, 5 Years, 50 years).

As a quick practice for the lexicon, I used the power of terms in seeing my work from a different perspective. It made somehow imagine different scenarios of it might go.

I would add Vision & Fiction (both can be used in game mode 1, where we can reflect on using particular notion or idea).

There should be all the 50 keywords when the cards are changing, not just a few of them.

I do like it. I used it more as a creative method to diversify and multiply my understanding than a method to define terms. Depending on my own current work or position..."

(Online qualitative survey, 13 PhD students, least to most liked responses to the REFLEXICON (scale: low 1–5 high): 1(0)-2(1)- 3(3)-4(7)- 5(2).

→ Focus on the UNMAKER

Finally, the UNMAKER [[→ SEE Link ↗](#)] was developed to shift away from laptops and to be used actively in the world. However, it remains largely unused due to the effects of the pandemic and the demands of face-to-face activities in 2022. It remains open to experimentation and is thus an example of a resource that is free, available, mobile and accessible. UNMAKER invites holders of mobile phones to deconstruct elements from our present environments by using FUTURES DESIGN words. Here, unmaking is about envisaging futures design and design future literacies as an act of reflexively breaking down and then removing items from futures, rather than forcefully adding new ones [[→ SEE Link ↗](#)].

Towards Lexis, Discourses and Critical-Creative Futures

BY Andrew Morrison

Reaching for new voices and situated articulations

The DESIGN FUTURES LEXICON was enacted with a diversity of participants whose responses and feedback were acknowledged in redesign of elements of the resources developed. The LEXICON was used in face-to-face physical and distributed simultaneous online classes and Master's sessions in Product and Service Design, linked with work in interactions design and futures, in a transdisciplinary Design PhD school.

It's been taken up in PhD thesis work with students from China (Yue Zou, 2023 under review and in this book) and South Africa (Bruce Snaddon, 2020; > see e.g. Design Education Reconsidered; in the ongoing decolonial PhD inquiries by Corbin Raymond). The LEXICON's also been linked to an adjacent project designBRICS and its reconceptualising futures [→ SEE [Essay 1: Anticipatory Design Literacies](#)] and a related PhD design fiction and PhD thesis, featured across this book (Jomy Joseph, 2023).

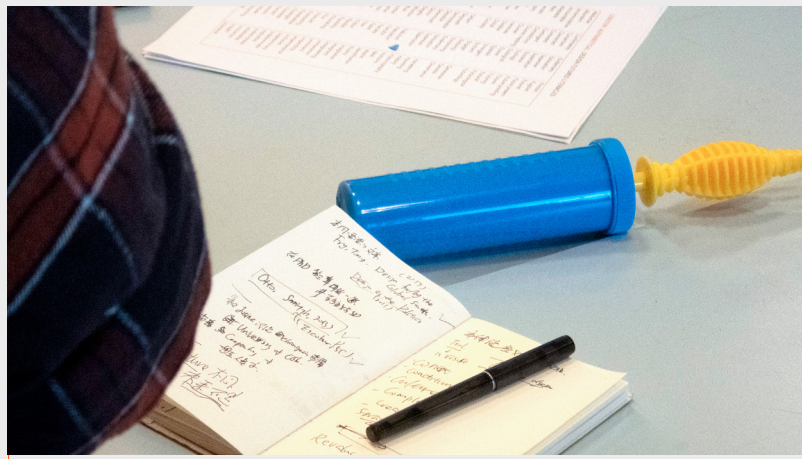


Figure 1: (Foreground) PhD student notebook, notes in Mandarin and English, with (background) 50 Design Futures Words from DFL, and (middle ground) balloon pump used for BALLUSION device from Design Futures Lexicon, AH0 PhD workshop, autumn 2019. (Image credit: Palak Dudani).

Our work's been taken up elsewhere, for example, in engagements with design fiction, context and future-making with a design school and municipality in Nantes (France), by our projects web and book design team CASUS LUDI / DESIGN FRICTION. It has also been introduced to a technical university in China in transdisciplinary design futures inquiries for STEM students. We've activated components of the LEXICON in four conferences, including for example an online on systems-oriented design based in India [→ SEE [Essay 3: Sustainability, Systems and Learning Design Futures, Volume 1](#)].

Further, in 2021–2022 as part of i06 centred on this book and reflections on the wider project, we've applied the LEXICON to word-narrative-context relations in working abductively with terms and play in shaping collaborative mediated meaning making in two workshops [→ SEE [OCTOPA and Spatial Chat in the chapter Learning Futures Design Otherwise, Volume 1](#)].

Given these experiments and the responses of participants, it is clear that words also matter greatly in designing futures (e.g. Adam and Groves, 2010).

Whose words for whose futures? What languaging and what relational, multi-participant and multimodally materialised semiosis are we situating and articulating? And through which terms and what shared vocabularies are we enacting?

With still relatively sparse work on languaging futures in either critical discourse studies or design, this LEXICON reached into and beyond legacies of colonising futures through language and by languages, to opening out relations between multiple modes of communicating and to clearer futures oriented articulations of imagining and conveying futures with and for others, in a mode of 'otherwising', including worlding or other wording (Mika et al., 2020).

In enacting such an 'otherwising', words will remain materials for designing but they will be implicated yet again in the ongoing acts of coming to know by designing. Here the '-ing' form is about ongoing change and re-considered presents. This concerns the implications of the received and changing domain areas and inter- and trans-disciplinarity with and between design and other expertise spanning a variety of knowledge exchanges.

Extending participation

Working with the LEXICON and listening to comments, suggestions and critiques from a diversity of users and uses, we see that there is also a need to even more actively invite and include the views and experiences, contributions and open uses of the resources by a diversity of learners and educators, researchers and professionals.

This is in keeping with the open access ethos of the overall project; however, it opens out bigger issues as to how such online resources may be redesigned. This

too is important in reflecting further on the project's success and accessibility. It is also a matter for a wider systemic and pedagogical infrastructural positioning of the LEXICON beyond the scope and funding of the project.

This extends to wider participative initiatives (e.g. the TRANSLER developed in IOS 6; [[→ SEE Learning Futures Design Otherwise, Volume 2](#)]) that include individual and collective experience and potential contributions for new words, orientation to give ones, refine definitions in use and contexts of change. Learning design languages of becoming through stepping out of the given or projected and assess the settings, suitability and applicability of terms, concepts, vocabularies and related discourses.

'Ways of articulating' is the mode of speaking, annotating, sharing and constituting a part of a wider DFL. Generating cross-cultural and translinguistic lexicons is a key part of widening the scope and the expertise in building global perspectives, especially in decolonising the 'language' of design futures (Pennycook & Makoni, 2020) in the context of decolonising language and knowledge (e.g. Deumert, et al., 2019; (Figure1).

Posthumanist futures learning ecologies and polylingualism

As humans working with and through designing - students, educators, researchers and professionals - we will need to develop the sensitivities, sensibilities, and tactics and strengths in making and understanding emergent polysemous systems and relations, as human and non-humans. These systems and relations include the material, biological, technological, creative and experiential.

As wider ecologies of co-composition and differential expression, distribution, agency and participation, they all entail communication and thereby language and its relations to other modes of semiosis.

This is part of decolonising dominant languages such as English, with care to how inclusions of terms from other languages signify power and linguistic dominance over diversity, translation, application and context (Law & Mol, 2020). Recent writing on relations between Applied Linguistics and posthumanism (Pennycook, 2021) offers Design Futures Literacies arguments and evidence from other expert domains – but remains unconnected to both design and futures.

The LEXICON sits within a wider poly-lingual framing of language and a plurality of socio-material discursive practices and mediated communication. It needs to be oriented within the changing dynamics of posthumanist, ecological and emergent bio-technical meaning making beyond its legacies of anthropocentrism.

Our futures will need to be co-crafted through attunement and attention to multi-species, bio-eco-techno-socio semiosis that needs to be seen in their acknowledgement and performance of a range of relations. These may be effectively encountered, activated, teased out and materialised, performatively and participative in approaches that are located in modes of becoming and experience, not only being and declarations as the PILLS address.

This may include attention from weak signals, as in I03, to soft systems to emergent, experimental and exploratory engagements with multiple ways of knowing, taken up in I0s 4 and 5, that may together and differently offer us all longer term sustainable planetary futures.

Unlearning; ‘catavaulting’

In the contexts of design and a world undergoing rapid change, where human-non-human relations are needing to be further explored and supported in relational, respons-able and care-ful ways, we will need to engage in wider and specific acts of learning and unlearning. This will demand that we far more fully recognise and work with nonhuman participants in acts of shaping and sustaining polysemous futures and ways they are worded and worlded.

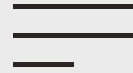
This will demand of us even further delicate, care-ful and enactable moves and shifts towards identifying and finding shared survivable futures beyond logics of endless consumption and design political-economic logics centred on exponential growth or uncritical circularity of reuse and regeneration where ‘expansion’ is nonetheless the goal. That one word matters. Without unpacking and redesigning our ecologies of survival and tackling what just this word means for design, we will in all likelihood not look at the conditions and constraints within which what we see as ‘collective briefs for futures in the present’ can be realised.

Weaving practice with analysis

These are learning spaces and opportunity events in studios and projects from which Master’s and doctoral students will each year depart from, into practice and research (Figure 2). There in new settings and modes of working as active young, critical and futures-primed citizen-professionals they will hopefully engage with how words and worlds may be put into active, critical relations of shaping futures by designing.

For Master’s students, increased sensitivity to words and the discourses within which they occur and shape designs and designing are connected to how design

practice is informed from the academy and how it needs to respond to real world needs, developments and challenges. We will need to continue to unmake and remake our curricula and constantly interrogate our terms and the concepts and values they carry. This is not always so prevalent in design schools as in other sectors of higher education where explicit critiques are more analytically driven. For our PhDs, words



will continue to be entangled in the works and analyses they develop in the interplay of practice and theory and in theory building through designing. They may also offer insights, contributions and prompts concerning implications and application of practice, policy and, indeed, current and anticipatory politics.

Figure 2. Design educator connecting words to design writing, world views and design futures and Phd thesis discourses. PhD BALLUSION on site workshop, AH0, autumn, 2019. (Image credit: Palak Dudani).



Reflections & Directions

Facilitating soft and flexible approaches

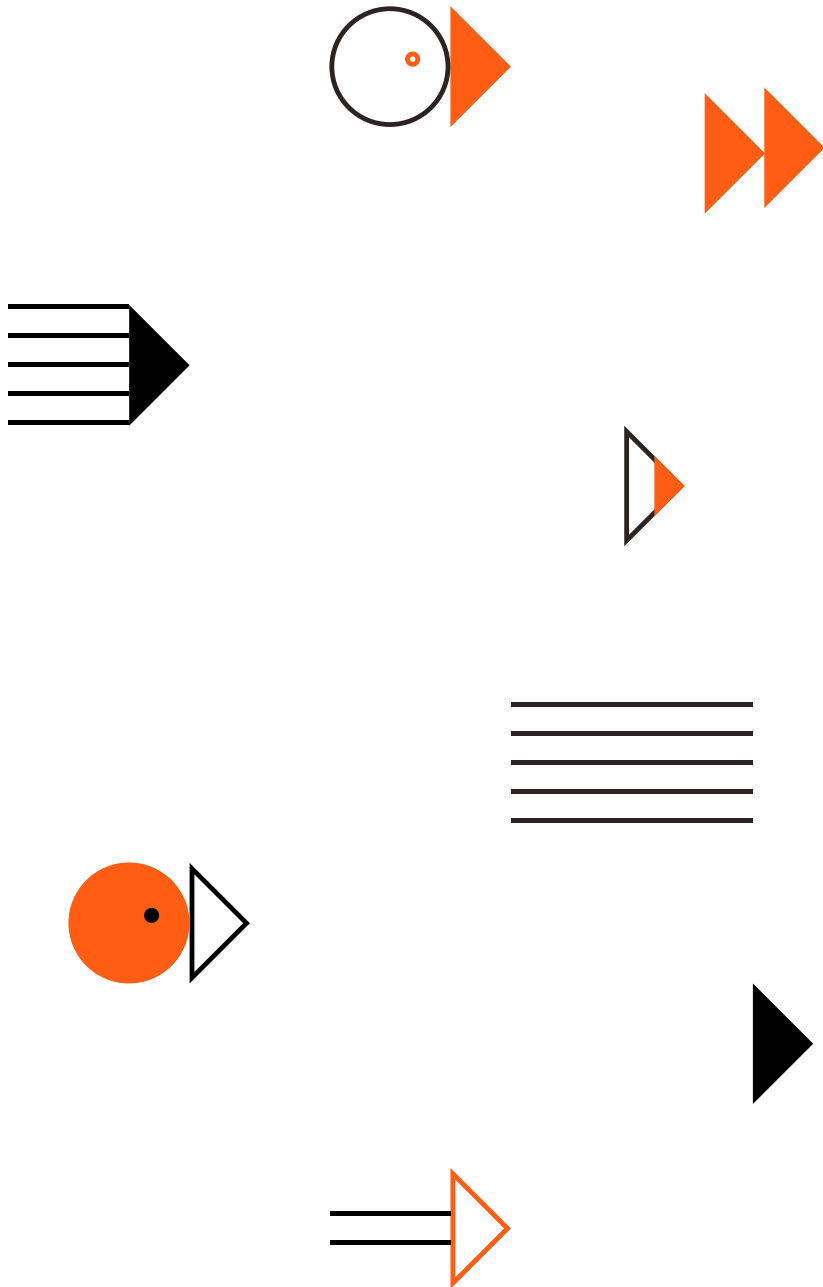
Design Futures Literacies are realised through their socio-material pedagogical and performative design practices. In reflecting on the making and uses of the LEXICON and inputs and comments from a diversity of students and educators, there seems to be a common need to develop 'soft' approaches that support relational flexibility.

By this we mean support for approaches that engage design students in working flexibly with and between words in shaping futures, at the level of general, popular and specialist terms - across languages and cultures - that are suited to and situated within contents of their genesis, use and potential [→ SEE FEATURE 3 P.136]. Through acts of care-ful and critically contextualised designing, words may be shaped to articulate design centred durative sustainable futures. These are words that will need to work with expository and poetic modes of discourses, via argument and exemplification, and through co-creative multimodal practices. Here metaphors, scenarios, serious play, attention to timescales and soft systems design views may provide our design futures literacies with rich spaces for articulating ways of designing our futures, anticipatively, but also bringing their prospecting (not extracting), back into actional and alternate presents. Here we need to be vigilant to the intentions of futurists as much as dominant languages and determinist approaches, whether environmental and technical.

The forces of machine language

... and then came ChatGPT and other AI-driven 'language machines'. While we have worked with a digital corpus and generative computation to some measure in the LEXICON, in the final chapter of this volume we open out discussion for design education of the arrival of the latest ed-tech and socio-political 'crisis' around machine learning, authenticity, intentionality and ethics and the emerging and entangled relations of digital futures and performative literacies. Recent debates indicate we need to actively and critically engage in new ventures into these emerging, forceful and challenging tools and systems around making and knowing, between the human and the machine.

Design educators also need to anticipate and governments ought to regulate what might transpire when human data-driven commercially promoted systems may communicate among themselves and where creativity and the framings of futures may be configured out of our human democratic hands. In all of this, language and relations of power, position, agency and articulation are still central and contested.



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PART II.
ELABORATING

POSITIONING



102: FUTURE PHILOSOPHICAL PILLS

BY Betti Marenko





Orientation – Definitions and approaches

What are the Future Philosophical Pills?

The form of the LEXICON is The Future Philosophical Pills are a set of curated insights designed to interrogate and challenge established notions (and assumptions) around the future. As critical lenses that expand the range of concepts and images used to speculate around possible tomorrows, they amplify the capacity to think and imagine 'futures'. Crucially, they are firmly planted in the practice of devising routes for implementation by embedding emerging insights into tangible design propositions. Thus, the Future Philosophical Pills work as diagnostic devices to cultivate imagination and assist in the process of introducing different, divergent and not-yet-existing futures into the present so to inform practice.

Genesis

The recurring questions of any educator working with, and towards, futures in the field of design (and beyond) - How to think about, and teach, multiple futures? - assert the fundamental and infinite plurality of what is conventionally (and imprecisely) called 'future'. This position, in turn, calls for the widest possible repertoire of concepts, ideas and notions, drawn from an equally wide range of perspectives and disciplines. What the Future Philosophical Pills contribute to this endeavour is a deck of cards, each proposing a concept/portal to think about futures.

The 40 selected terms are (mostly) extracted from, and explained through, a selected corpus of process philosophies, at present, situated largely within continental thought (1). The Pills have been packaged in a deck of cards to offer our (initial) target audience of design learners not only a playful and intuitive engagement with the practice of interrogating futures, but also to introduce an element of surprise and chance within research. Alongside the Pills deck, a second deck of Prompts (equally comprising 40 cards) is provided, offering further directives, questions, provocations and nudges that can intersect, and further complexify, the Pills.

This process has been designed to open up routes for adventurous thinking, conceptual exploration and playful 'philosophy-in-action' that can feed into, and scaffold, a futures-oriented design practice.



Why Philosophy matters to design: philosophy-in-action

Conceived as a way to augment Futures Literacy for designers from a philosophical perspective, the Future Philosophical Pills are informed by a transdisciplinary (and transversal) ethos whose aim is to enact philosophy-in-action, or practical philosophy. This concerns working at the hinge of the speculative and the pragmatic to develop intellectual interrogations that can scaffold tangible interventions and material propositions, which in turn can feed back onto speculation.

▼ **Figure 1**
Add caption.
Workshop May 2022.
Image credit:UAL.



It's crucial to understand that the speculative and the pragmatic are not opposed to each other: pragmatic doesn't mean practical, against the speculative/theoretical. Rather, what is advocated is a speculative-pragmatic approach that affords staying open to invention and future-crafting while remaining immersed in what is happening, the now and the how, effectively weaving speculation and pragmatism together (2). 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, and use uncertainty as an opportunity to create meaning by drawing on experimental post-ontological methods of inquiry, of which more below (3). Importantly, this approach does not claim to offer solutions to existing problems. Instead, it prompts ways of 'figuring out', of asking new questions, of reframing problems. Crucially, it concerns not only spaces of learning but also of un-learning [→ SEE Essay 2: Altering Prospective Design Pedagogies, Section 2, 'Reflecting on our pedagogies', Volume 1].

Taking the Pill: a note on the 'pharmakon'

We take the image and metaphor of the 'pill' in two ways. On a first level, the pill suggests that these philosophical ideas are like active ingredients, possessing and dispensing

Notes:

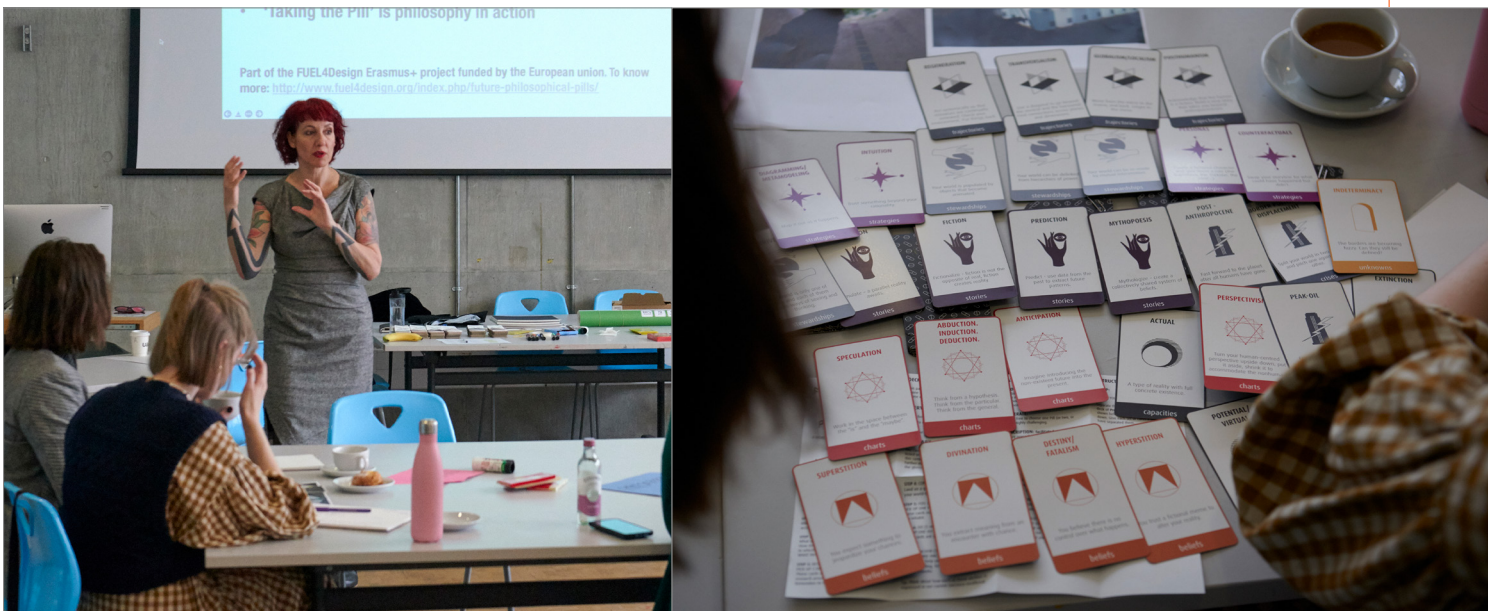
1. We are committed to expand it to a non-European corpus, and we envision a second phase of research engaging with experts on global south and indigenous thought around futures.

curative properties. Easily digestible, they produce tangible effects, and can be prescribed as a fast, reliable, effective and targeted cure to assist design students with their inquiry.

Then, a second layer evokes the ‘pharmakon’, which in Greek signifies both medicine and poison: something that can be either beneficial or disruptive, depending on dosage and mode of intake. Thus, 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 a powerful and appropriate metaphor for the Pills. It reinforces their ethos of deploying philosophy in action to interrogate futures by staying with uncertainty and, indeed, by turning uncertainty into a genuine material to work with.

Questions of method: An encounter with chance as an opportunity to make meaning

The Future 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 (supplemented by Prompt cards as needed), users 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’ content, together with the individual engagement and interpretation of the participant:



co-production. In other words, 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. This chance-based method is significant for three 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, contain and prepare for the future (future proofing).

▲ **Figures 2 & 3**
Philosophical Pills workshop, 25 March 2020. (Image credit: James Bryant).

Future Philosophical Pills: Pills list [by cluster]

BELIEFS:



Destiny / Fatalism [12]

You believe there is no control over what happens.

Divination [14]

You extract meaning from an encounter with chance.

Hyperstition [21]

You trust a fictional meme to alter your reality.

Superstition [36]

You expect something to jeopardize your chances.

CHARTS:



Abduction / Induction / Deduction [1]

Think from a hypothesis / from the particular / from the general.

Anticipation [5]

Imagine introducing the non-existent future into the present.

Perspectivism [25]

Turn your human-centred perspective upside down, put it aside, shrink it to accomodate the nonhuman.

Speculation [35]

Work in the space between the "is" and the "maybe".

STEWARDSHIPS:

Animism [4]

Your world is populated by spirits and becomes animated.

Decolonization [1]

Your world can be decolonized by dismantling hierarchies of power.

Hacking [19]

Your world can be reprogrammed by intervention.

Pluriverse [26]

Your world is only one of many worlds, each of them produced by different ways of thinking.

CAPACITIES:



Actual [3]

A type of reality with full concrete existence.

Possible / Probable / Plausible / Preferable [27]

A type of reality that: might happen / is likely to happen / could happen / you wish to happen.

Potential / Virtual [30]

A type of reality on the verge of happening, but not material yet.

Unexpected [39]

A type of reality that catches you by surprise.

CRISES:



Border politics / Displacement [6]

Split your project into two camps and pitch one against the other.

Peak-oil [10]

Move to a landscape where extraction is no longer a resource and oil is exhausted.

Extinction [16]

Your world has been terminated.

Post-Anthropocene [28]

Fast forward to the planet after all humans have gone.

STORIES:



Fiction [17]

Fictionalize - fiction made from elements of real, fiction created.

Mythopoesis [24]

Mythologize - create a shared system of beliefs.

Prediction [31]

Predict - use data from the past to extract future patterns.

Simulation [34]

Simulate - a parallel world.



STRATEGIES:



Conceptual Personas [7]

Create a fictional character and give them a role (the Superhero, the Trickster, the Idiot...).

Counterfactuals [9]

Swap your storyline for what could have happened but didn't.

Diagramming / Metamodeling [13]

Map it out as it happens.

Intuition [23]

Trust something beyond your rationality.

UNKNOWNNS:



Contingency [8]

It did not need be. Could it have been otherwise?

Indeterminacy [22]

The borders are becoming fuzzy. Can they still be defined?

Serendipity/ Chance [33]

How can you have a random encounter?

Uncertainty [38]

Can you observe and measure something at the same time?



TRAJECTORIES:



Globalism / Localism [18]

Move from the micro to the macro, and back. Linger in the meso.

Posthumanism [29]

Acknowledge that the human is a fiction. Build a new story that takes you beyond anthropocentrism.

Regeneration [32]

Act systemically so that resources are continually renewed. Check your environment. Put things back.

Transversalism [37]

Use a diagonal to go beyond the vertical and the horizontal. Find connections across planes and dimensions.

VISIONS:



Activism [2]

Make it happen by all means necessary.

Dystopia [15]

Enter a place so dreadful that it exists only in a gloomy future.

Heterotopia [20]

Enter a place that exists here and now, only over there rather than here.

Utopia [40]

Enter a place so ideal that it exists nowhere.

◀ **Figure 4**
Pills List (by Cluster). Future Philosophical Pills, IO2, FUEL4DESIGN: [Link](#) ▶

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

Finally, it makes a stand in favour of uncertainty by reclaiming it from current neoliberal rhetoric where it is deployed (together with agility, resilience, mobility, flexibility) as a mode of anxiety-inducing affective governance.

Figures 5-8 ►
Philosophical
Pills workshop,
25 March 2020.
(Image credit:
James Bryant).

The questions that this approach strives to address are the following:

How do we conduct 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?

For those involved in design education, these questions are even more relevant as they not only concern how to deal with increasing uncertainty, but also with the thorny matter of how we firmly knit together theory and practice, thinking and making, design and philosophies, the speculative and the pragmatic.

Let's consider for a moment the notion of the 'object' of research, positioned as something discrete, identifiable, and separate from the researcher. Or, similarly, let's consider the expression 'real-world' problems, with its assumption of a world 'out there', as if it was a homogenous entity waiting for human intervention to gain some meaning. Within the framework presented here - where what we call world is acknowledged as made by multiplicities and events in a continuous flow and thus demanding a philosophy in action approach - these notions are revealed as fictions, whose usability, not to mention their questionable ontological premises, has run its course.

In other words, what we propose is not only a methodological but also an epistemological shift. This is a 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 human coding) to seeing inquiry and knowledge-production as 'diffractive' (to use Karen Barad's expression).

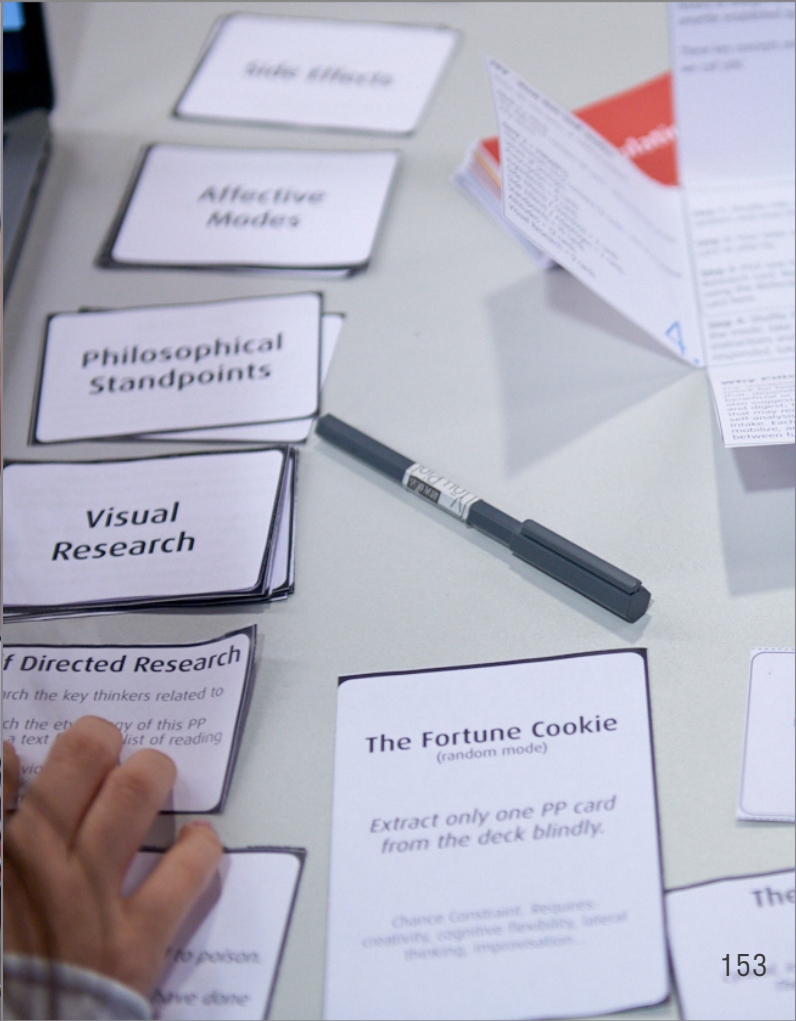
Put differently, this means to root knowledge-production in the entanglement of theory and practice, of the speculative and the pragmatic as well as of researcher and

Notes:

2. Massumi, B. (2011). *Semblance and Event. Activist philosophy and the occurrent arts*. The MIT Press; Phillip Vannini, P. (2015). (Ed.). *Non-representational methodologies. Re-envisioning research*. Routledge.

3. St. Pierre, E. (2019). 'Post qualitative inquiry in an ontology of immanence'. *Qualitative Inquiry*, 25(1), 3-16;

St. Pierre, E. (2016). 'Curriculum for new material, new empirical enquiry'. In *Pedagogical Matters. New materialisms and curriculum studies*. (Eds.) Snaza, N., et al. Peter Lang. 1-12.



research. Moreover, it highlights the important concern 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 Future 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. Borrowing Maggie MacLure’s lucid analysis, this becomes an instance of what she calls the ‘serious play of rigorous experimentation’ (MacLure 2020: 4) (4) through which uncertainty finds its way into the frameworks and methods of research to produce creative encounters with the unforeseen.

An instance of transdisciplinary pedagogy

Transdisciplinarity furnishes us, educators, learners, change-makers, with tools for thinking, knowing, and relating to the world so that we become able to navigate uncertain turbulent terrains. It casts in sharp relief the epistemological shift from interpreting the world as a homogenous entity – the fiction conveyed by the misleading expression ‘real-world’ problems – to attuning instead to the multiplicity of worlds we also contribute to create as researchers, educators, change-makers (5).

By establishing collaborative strategies with a plurality of fields, modes of knowledge-making, methods, and perspectives, transdisciplinarity builds an expanded vision where common concerns (shared, divergent, or both) can materialise. Design is at the forefront of this endeavour because it has the capacity to spearhead modes of speculative-pragmatic interventions that privilege the discursive. It can do so by striving to shift from an emphasis on problem solving to an emphasis on problem finding (6).

This manoeuvre, however, can be sustained only through the production of salient, novel and difficult questions outside the known boundaries of established disciplines – be them design practice, process philosophy, science and technology studies, anticipation studies or else. Hence an educational practice inspired by maieutic: a mode of inquiry driven by an ongoing co-design of the relevant questions that must be asked around matters of concern, and by a structured, escalating meta-questioning that can lead to self-transformation. Put differently, this ongoing reflective approach would position learning as a transformative practice (7).

Notes:

5. Maggie MacLure. (2020). *Inquiry as Divination. Qualitative Inquiry*.
6. Timothy Morton. (2018). *Dark ecology. For a logic of future coexistence*. Columbia University Press
7. Tom Fischer, T. & and Lorraine Gamman (Eds.). (2019). *Tricky Design. The ethics of things*. Bloomsbury; Joanna Boehnert. 2018. *Design, ecology, politics. Towards the ecocene*. Bloomsbury; Susan Yeleovich and Barbara Adams (Eds.). (2014). *Design as Future-Making*. Bloomsbury; Betti Marenko. 2018. The un-designability of the virtual. Design from problem-solving to problem-finding. In *UnDesign: Critical practices at the intersection of art and design*, (Eds.). Gavin Sade, Gretchen Coombs and Andrew McNamara.

◀ **Figure 9**
FUTURE
PHILOSOPHICAL
PILLS. Workign
with collage in
The ‘Hacking
Futures – Futures
Hacking’
Philosophical
Pills workshop
at Central Saint
Martins, UAL, 7
February 2020.
(Image Credit:
James Bryant).

Overview: Raising Questions For/To/From Futures

How do the Philosophical Pills work?

The Future Philosophical Pills are versatile, and they can be used for a variety of purposes. Below we illustrate those that we have tested in a number of educational settings, both online and IRL.

To activate/disrupt a current project: as critical lenses to interrogate the design brief.

To generate a new brief: as discursive devices, deploying the constraint of setting the scene in 2050

To kickstart team formation: as brainstorming support (Hybrid Futures Hackathon)

To rethink corporate futures: as imagination triggers (Hybrid Innovation programme @TokyoTech)

To explore relations across transdisciplinary content: as a connective building device (Making Waves Scientist in Residence, a collaborative project between Central Saint Martins and Tokyo Tech).

Workshop Example

Participants work in small groups (5–7) and discuss their visions of the future; take the Pill(s), which can be either facilitator-prescribed or random-picked; apply them as critical filters to the development of future scenarios diverging from their initial ones; as an optional they use the Prompt(s) to activate and further mobilise the ‘filtering’ and disrupting (again, facilitator-prescribed or random-picked).

Step-by-step process

Set the scene: Imagine/anticipate 2050. How do you imagine this near future? Provide students with typologies, e.g. Wellbeing/ Community/ Technical Machines/ Scalability/ Infrastructures.

- Silent brainstorming (5 min max)
- Find images & keywords for your chosen category in 2050. Populate wall (or board if working online)
- Use images as prompt for discussion: what kind of future they evoke?

Take the Pill(s)

- Research the Pill(s) using the material provided on the project website for each card. Conduct own supplementary research.
- Continue populating wall (or board) with relevant images, keywords and insights.
- Formulate a collective question to inform the development of a future scenario or world-building. This can be a research question, a design question, a question for/

to/from the future.

- Add one or more Prompts from the Prompts deck to insert extra filters and constraints.



▲ Figures 10 & 11

Philosophical Pills workshop, 25 March 2020. (Image credit: James Bryant).

Build your future scenario

Use the insights, and material assembled by intersection Pills and Prompt to scaffold your scenario. Develop your storytelling to build a world, an 'otherwise future' or an 'alternative present'. Use the Prompt cards that inform the kind of persona/affect you are inhabiting (FEEL); the Prompt cards that ask you to create something tangible (DO), and finally the cards that help you refine the kind of world you are building, by offering social constructs and frameworks (ANCHOR). All these elements participate in the construction of your scenario. Be as granular as possible so as to be able to translate these elements into a cohesive piece of storytelling that can be presented as a tangible proposition for feedback and discussion.

Task/Assignments:

- Research and produce a Visual essay/sound piece/or other media agnostic intervention
- Produce annotated bibliography + design precedents examples as support to research.

Visual examples (charts, links, online resources)

The two decks are available: [[→ SEE Link ↗](#)]

INDETERMINACY



The borders are becoming fuzzy. Can they still be defined?

unknowns

CONTINGENCY



It did not need be. Could it have been otherwise?

unknowns

SERENDIPITY/ CHANCE



How can you have a random encounter?

unknowns

UNCERTAINTY



Can you observe and measure something at the same time?

unknowns

HYPERSTITION



You trust a fictional meme to alter your reality.

beliefs

DIVINATION



You extract meaning from an encounter with chance.

beliefs

DESTINY/ FATALISM



You believe there is no control over what happens.

beliefs

SUPERSTITION



You expect something to jeopardize your chances.

beliefs

ANTICIPATION



Imagine introducing the non-existent future into the present.

charts

ABDUCTION. INDUCTION. DEDUCTION.



Think from a hypothesis. Think from the particular. Think from the general.

charts

SPECULATION



Work in the space between the "is" and the "maybe".

charts

PERSPECTIVISM



Turn your human-centred perspective upside down, put it aside, shrink it to accommodate the nonhuman.

charts

◀ ▶ **Figure 13**

The Pills Deck, Fuel4Desires
Philosophy Pills, IO2, FUEL4DES

HETEROTOPIA



Enter a place that exists here and now, only over there rather than here.

visions

UTOPIA



Enter a place so ideal that it exists nowhere.

visions

ACTIVISM



Make it happen by all means necessary.

visions

DYSTOPIA



Enter a place so dreadful that it exists only in a gloomy future.

visions

INTUITION



Trust something beyond your rationality.

strategies

CONCEPTUAL PERSONAS



Create a fictional character and give them a role (the Superhero, the Trickster, the Idiot...).

strategies

DIAGRAMMING/ METAMODELING



Map it out as it happens.

strategies

COUNTERFACTUALS



Swap your storyline for what could have happened but didn't.

strategies

SIMULATION



Simulate - a parallel reality awaits.

stories

FICTION



Fictionalize - fiction is not the opposite of real, fiction creates reality.

stories

PREDICTION



Predict - use data from the past to extract future patterns.

stories

MYTHOPOESIS



Mythologize - create a collectively shared system of beliefs.

stories

Reference Materials for Pills Cluster: BELIEFS

DESTINY/FATALISM: *You believe there is no control over what happens.*

Fatalism is the belief that all events are predetermined and therefore inevitable. It is the belief in fate, which is another name for destiny: the forces that (some believe) control what happens in the future, and crucially, are outside human control.

Though the word “fatalism” is commonly used to refer to an attitude of resignation in the face of some future event or events which are thought to be inevitable, philosophers usually use the word to refer to the view that we are powerless to do anything other than what we actually do. This view may be argued for in various ways: by appeal to logical laws and metaphysical necessities; by appeal to the existence and nature of God; by appeal to causal determinism (SEP).

An important approach to destiny and fate is found in the philosophy of the Stoics (Greece, early 3rd century BC). In the Stoic cosmology everything is determined and there is a reason for everything. They are therefore deterministic. At the same time they also believe in free will. By postulating a many-dimensional network of events (cause-effects), rather than one single chain they imagine a ‘swarm’ of causes interacting with each other and humans freely participate in the determined chain of events independently of external conditions and are therefore responsible for their own actions, modulating the apparent arbitrariness of fate.

For Freud the father of psychoanalysis anatomy is destiny, referring specifically to how female biology informs her social and cultural status, and her mode of living. Against this, some feminist and new materialist theorists postulate that posthuman is a what overcomes these limitations thanks to technological hybridisation (Haraway, Braidotti). Contemplating the blossoming of an apple tree, polymath Vilem Flusser describes the process as the tree waking up to its destiny, so that not only the ‘virtual’ in it became manifest, but ‘necessity’ too was added to create the tangible reality of the buds.

READINGS

- Solomon, R. (2003). On Fate and Fatalism. *Philosophy East and West*, 53(4), 435-454 www.jstor.org/stable/1399977
- Fuller, M and Goriunova, O. (2019). ‘Luck’. In *Bleak Joys: Aesthetics of Ecology and Impossibility* pp. 75-92, Minneapolis and London: University of Minnesota Press.
- Flusser, V. and Novaes, R. (2013). ‘Buds’. In Zielinski S. (Ed.), *Natural: Mind* pp. 113-120. University of Minnesota Press.
- Cassin, Barbara, et al. (2014) “K.” *Dictionary of Untranslatables: A Philosophical Lexicon*, by Steven Rendall et al. Princeton and Oxford: Princeton University Press pp. 531-540 www.jstor.org/stable/j.ctt5hhntn
- Grosz, E. (2017). *The Incorporeal: Ontology, Ethics, and the Limits of Materialism*. New York: Columbia University Press.

DIVINATION: *You extract meaning from an encounter with chance.*

Divination is a way to extract knowledge about the future from signs that are interpreted by a ‘diviner’ who is able to read them, for instance, the flight of birds or the interior organs of animals, the patterns of tea leaves, or of coffee grounds. Divination can be described as an ongoing inquiry into the unknown that uses chance as an opportunity to make meaning. Divination presupposes a knowledge hidden in signs; a knowledge that cannot be known but only recognized by observing traces and by making conjectures; ultimately a knowledge without a subject (Agamben, 2015). From the 17th century onwards, modern science expels divinatory sciences from the pursuit of knowledge. The subject of science becomes the only subject of knowledge, denying existence to knowledge without subject. However, as Agamben remarks, the apparent demise of divinatory sciences, far from signalling the end of the knowledge of the unknown, has ensured its distribution to other fields somehow attuned to forms of speculative knowledge-making: psychoanalysis, arts, finance, literature, design fiction. It is worth pointing out that for the ancient Greeks the conjectural method was the domain of the goddess Metis, who not only represented divination by means of water but was also the goddess of cunning intelligence. Metis was Zeus’s first wife. Zeus swallows her as soon as she conceives Athena, and in doing so he makes Metis part of his own body of sovereignty and control, eliminating any element of unpredictability and disorder from the establishment of logos (Detienne & Vernant, 1978).

Divinatory practices are significant not because they offer definitive answers, or a clear-cut decision-making technique, but because they are a process of speculating into uncertainty that can accommodate enigmatic, equivocal, or even opposed and conflicting meanings: this ambiguity of knowledge-making must be treasured if we want to inhabit the contingency of the world (Ramey 2016).

For Deleuze, who writes about divination in his discussion of the event in Stoic philosophy, divination is ‘the relation between the pure event (not yet actualized) and the depth of bodies, the corporeal actions and passions whence it results’ (Deleuze, 1990: 163). Put differently, divination sets the ground for creation by seeking in the emergent forms the seeds of forms yet to come, of future actualizations and differentiations. In this sense divination - ‘the art of surfaces, lines, and singular points appearing on the surface’ (ibid.) - is a diagram that connects the known to the unknown. Any diagrammatic operation of divination captures (and wills) possible events by impacting on how present responses are selected, designed and implemented. The relationship between divination and diagrams is a significant one: like divination, diagrams articulate the conditions that make possible conceptual creation and the manifestation of new expressions; like divination, they do not determine directly the outcome in advance. Again, indeterminacy is key.

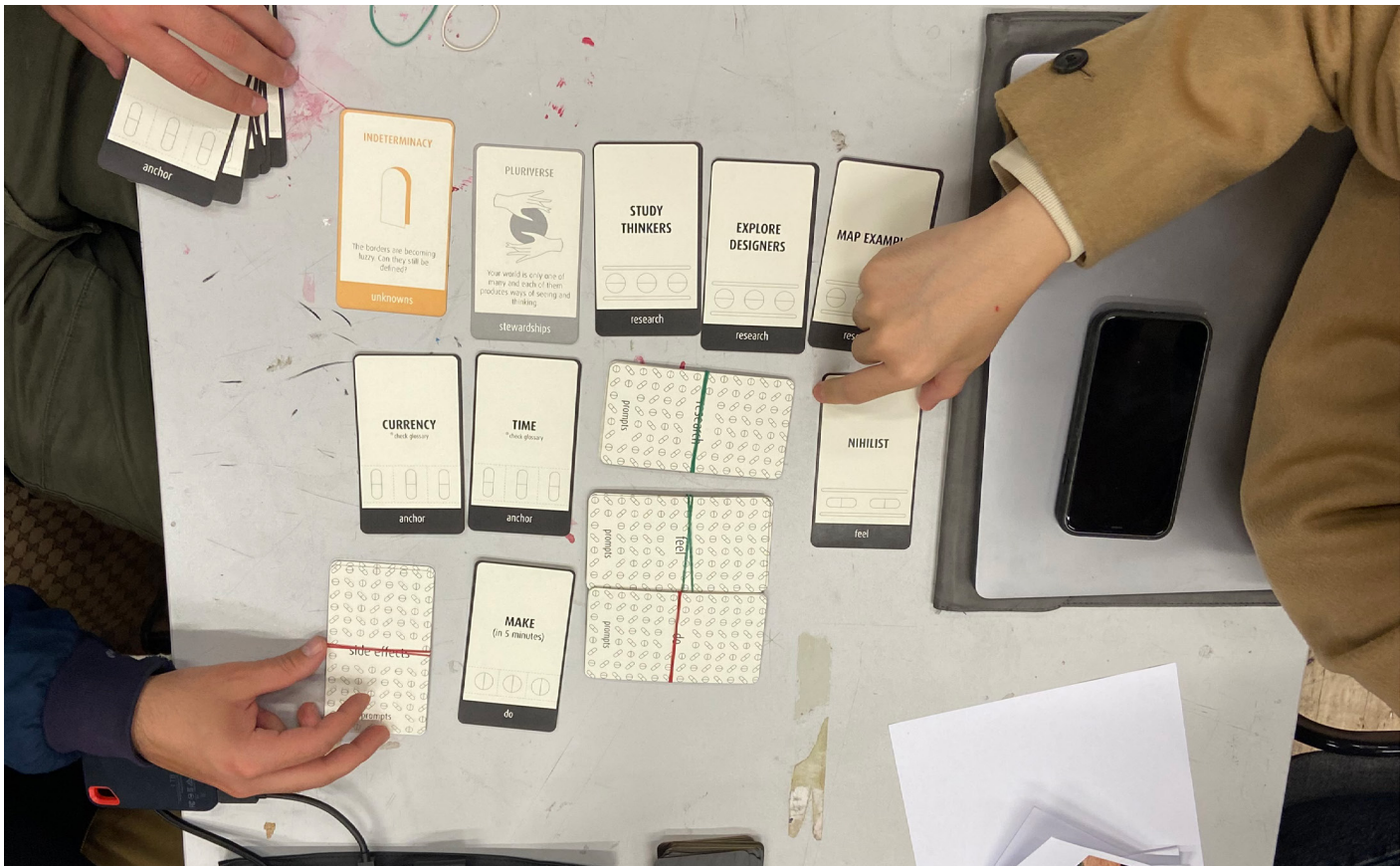
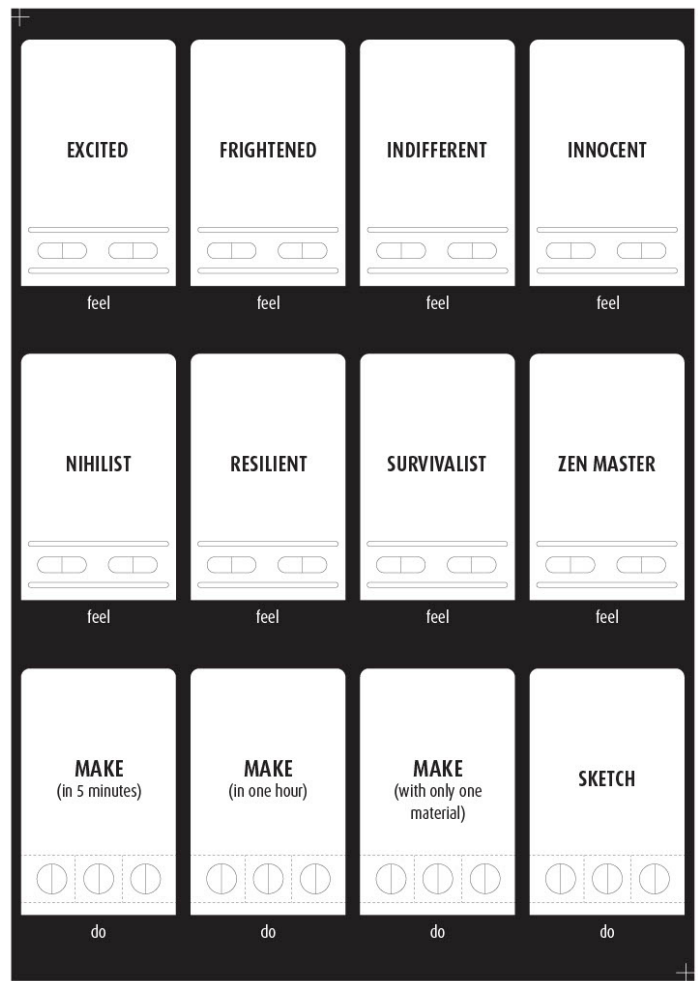
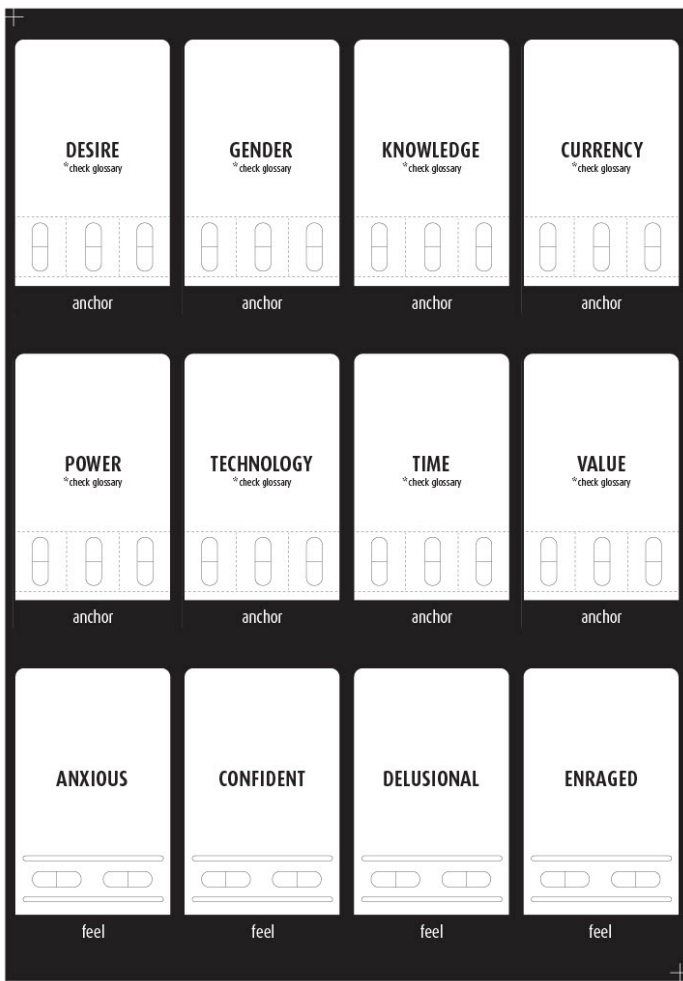
READINGS

- Ramey, J. (2016). *Politics of divination. Neoliberal endgame and the religion of contingency*. London and New York: Rowman and

◀ **Figure 14**
Example of
Reference
Material
for a Pills
Cluster, Future
Philosophical
Pills, IO2,
FUEL4DESIGN.

► **Figure 15**
The Prompts
deck, Future
Philosophical
Pills, IO2,
FUEL4DESIGN.

Figure 16 ►
Philosophical
Pills workshop,
25 March
2020. (Image
credit: IO2,
FUEL4DESIGN).



Future Philosophical Pills at CODE

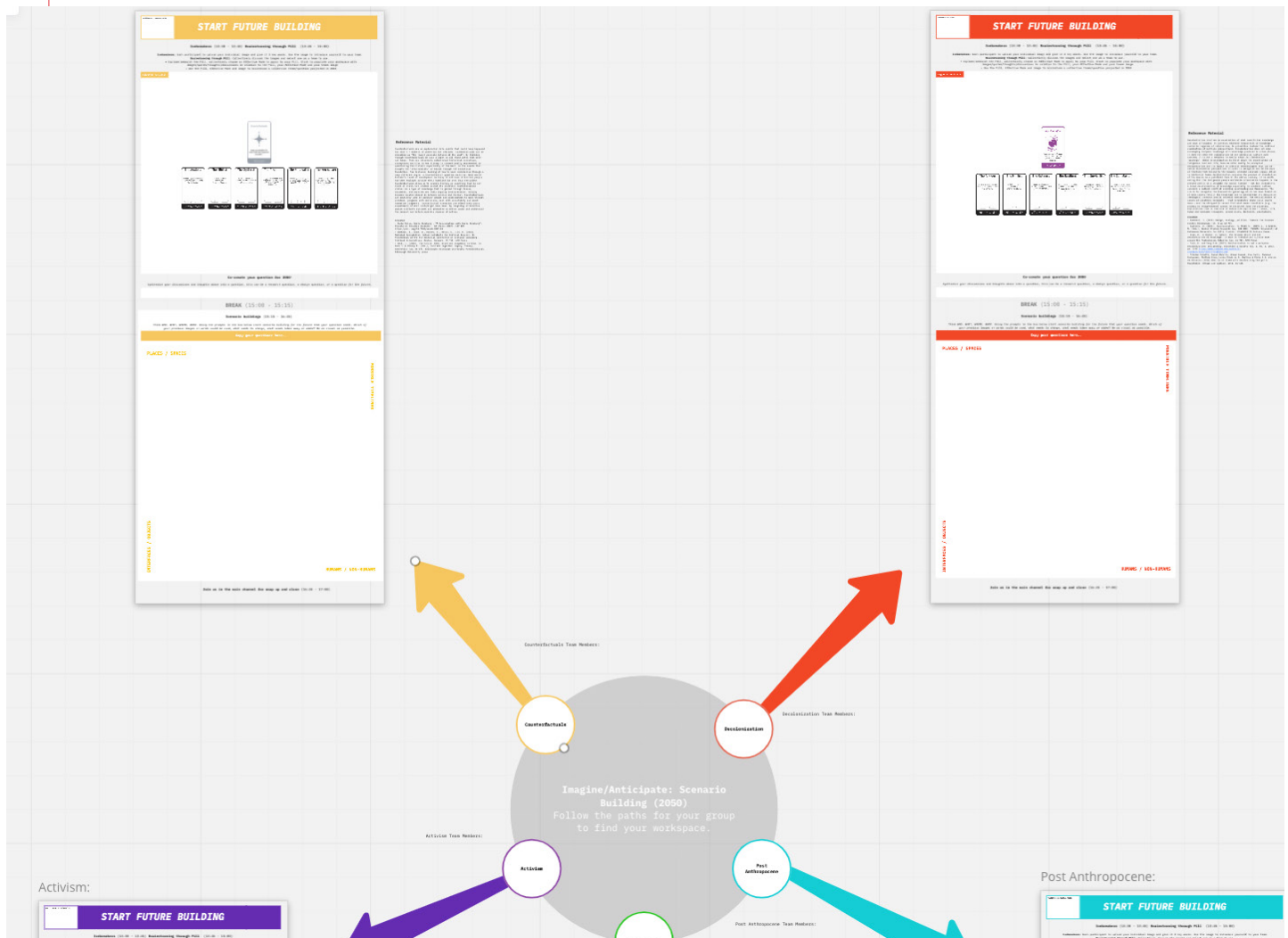
Reflections

By Pras Gunasekera

Creative Futures, a three-day workshop and event, held from the 7–9 June 2020 invited students studying at CODE University of Applied Sciences, Berlin and partner institutions to explore the Future Philosophical Pills and develop conceptual scenarios for a plurality of futures in 2050.

Before reflecting on the two days, a note about CODE University. The core approach to CODE's pedagogic framework is 'curiosity-driven education' with a focus on project-based, experiential learning which aims to facilitate students to 'acquire core competences that help you to succeed in a dynamically changing world – even in fields that don't yet exist'. Teaching and learning at CODE take on a more applied technical approach, something that sits in slight contrast with Central Saint Martins (UAL) which has an openness to conceptual projects. This made a fitting context to utilise the Future Philosophical Pills to encourage a radical openness to future scenario building through imagining a plurality of positions beyond the participants' own.

▼ **Figure 17**
Aerial views of Miro 'studio' space. (Image credit: Pras Gunasekera).



In total, 21 participants signed up for Creative Futures, a mix of CODE students and those from partner institutions (Mondragon University and Leinn International), the mix of students was afforded by hosting Creative Futures in a purely online, interactive space utilising Miro as the 'studio' [Figure 17].

The first half of day one gave an overview to the aims and objectives and the brief students would be working with [Figures 18 and 19]. Participants were then introduced to a range of 'input' talks from facilitators at CODE (as a means of 'front loading' theory and approaches to allow for students to have most of the time engaging with future scenarios building), ranging from 'understanding time and temporalities sociologically to aid in understanding futures' to 'how does design negotiate the future?'

◀ **Figures 18 & 19**
Creative
Futures aims
and objectives.
(Image credit:
Pras Gunasekera)

- For you to engage with a range of talks that introduce you to aspects of futures and how to imagine, consider and design for them.
- For you to engage with tools, notably the Future Philosophical Pills, that help facilitate you in imagining a plurality of futures
- For you to work in multidisciplinary teams to explore, imagine and visualize futures in 2050.

Aims & Objectives



What.

Collectively (in your teams) define a future scenario in 2050.

How.

Create a visualisation of this scenario in any media e.g., a short movie [max. 3-min], a poster/image or even a prototype to an app. However, we do not want to see a powerpoint/keynote or Miro presentation!

Why.

As designers to today and tomorrow's worlds, futures thinking and being able to visualise futures is an imperative skill. Explore your creative skills!

The Brief



START FUTURE BUILDING

Icebreakers (13:30 - 13:45) Brainstorming through Pill (13:45 - 15:00)

Icebreakers: Each participant to upload your individual image and give it 3 key words. Use the image to introduce yourself to your team.

Brainstorming through Pill: Collectively discuss the images and select one as a team to use.

- Explore/research the Pill, collectively choose an Affective Mode to apply to your Pill. Start to populate your workspace with images/quotes/thoughts/discussions in relation to the Pill, your Affective Mode and your team's image
- Use the Pill, Affective Mode and image to brainstorm a collective theme/question projected in 2050

<https://ed.athensga.edu/>


can we agree that we want to reduce/eliminate suffering?

what do we like about humanity?

why do we have so much suffering? -> egoic mind

After every time we have a choice, we have a choice between living in a world where resources are infinite?

What is reality? can we exist in a parallel reality where resources are infinite?

Co-create your question for 2050

Synthesize into a question, this can be a research question, a design question, a question for the future.

(how) Can humans exist in post-Anthropocene era?

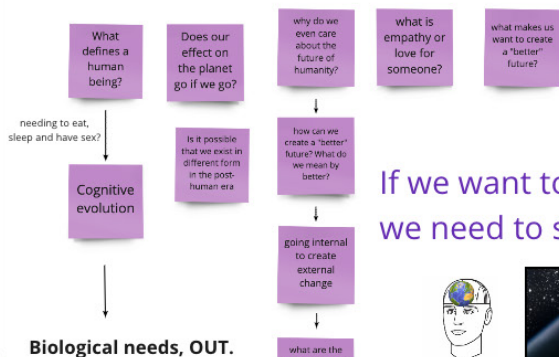
BREAK (15:00 - 15:15)

Scenario buildings (15:15 - 16:45)

Think WHO, WHAT, WHERE, WHEN. Using the prompts in the box below start scenario building for the future that your question needs. Which of your previous images or words could be used, what needs to change, what needs taken away or added? Be as visual as possible.

Copy your questions here...

PLACES / SPACES



If we want to improve the world
we need to start with ourselves

THE WORST DAMAGE ON EARTH
IS DONE BY THE HUMAN EGOIC MIND

INTERFACES / OBJECTS



consciousness vs ego

HUMANS / NON-HUMANS

Post - Anthropocene



Fast forward to the planet after all humans have gone.

Crises

What does it take to imagine the world after the human? Is it Science Fiction? Is it Dystopia? Is it just too scary?

Or is it needed to reassess the impact of human on the planet? That there is no human without the nonhuman...

Can we think outside ourselves?

Have you ever considered the Post-Anthropocene in your practice/ work?

Reference Material

The post-Anthropocene is unimaginable. We are told that we live in the new era of the Anthropocene - This term was coined by scientist Paul Crutzen (2002) who proposed that we have now left the Holocene and entered the 'time of human' - when the human has become a geological force capable of affecting all life on this planet (Bainbridge 2003). Scientists and climate scientists have the Anthropocene hypothesis as a number of human-driven processes that are likely to leave a lasting mark on the planet for tens of millions of years. These include rising oceans due to the melting of greenhouse gases, ocean acidification, urbanization, habitat destruction and extinctions; environmental degradation. Human activity, particularly since the Industrial Revolution, is seen to be altering the planet on a scale comparable with some of the major events of the pre-historic past and are now seen as permanent, even on a geological time-scale. Can the post-Anthropocene be imagined without immediately falling into extinction anxiety, climatic dystopia or the fallacy of human exceptionalism? To do so seems to think about planetary arrangements, hybrid ecologies of the human and the nonhuman (but also the perceptible and the imperceptible). Post-Anthropocene in this sense means the effort to speculate on the nonhuman on a planetary scale. It also means that the notion of the Anthropocene per se must be contested. There is hubris in describing this age as the age of the human when the anthropos have never been only human. As it makes explicit the human impact on the planet, at the same time the Anthropocene reveals the fragility of the traditional figures of thought that have far too often pitched human against nature, human against nonhuman, the animated vs the inanimate, life and non-life, the organic and the nonorganic in a top down hierarchy. This means to reject the (in)visibility of human exceptionalism (Gruenewald); the idea that there is a hierarchy of species with the anthropos at the top of the pyramid. That's why any speculation on the post-Anthropocene concerns the non-human. What has been defined as the 'nonhuman turn' is at the center of current debates where we find a variety of terms used to describe slightly different versions of the same thing: nonhuman, inhuman, posthuman, other than human; they all strive to express the otherness and the challenge of thinking what is not 'us'. These new intellectual forms of inquiry attempt to craft a mode of philosophy, ethics, and interpretation that rejects the classic humanist divisions of self and other, mind and body, society and nature, human and animal, organic and technological. The Postanthropocene can be imagined as a world-without-us, or as a planetary cohabitation of multilocalities where the human is not the most important entity.

READINGS

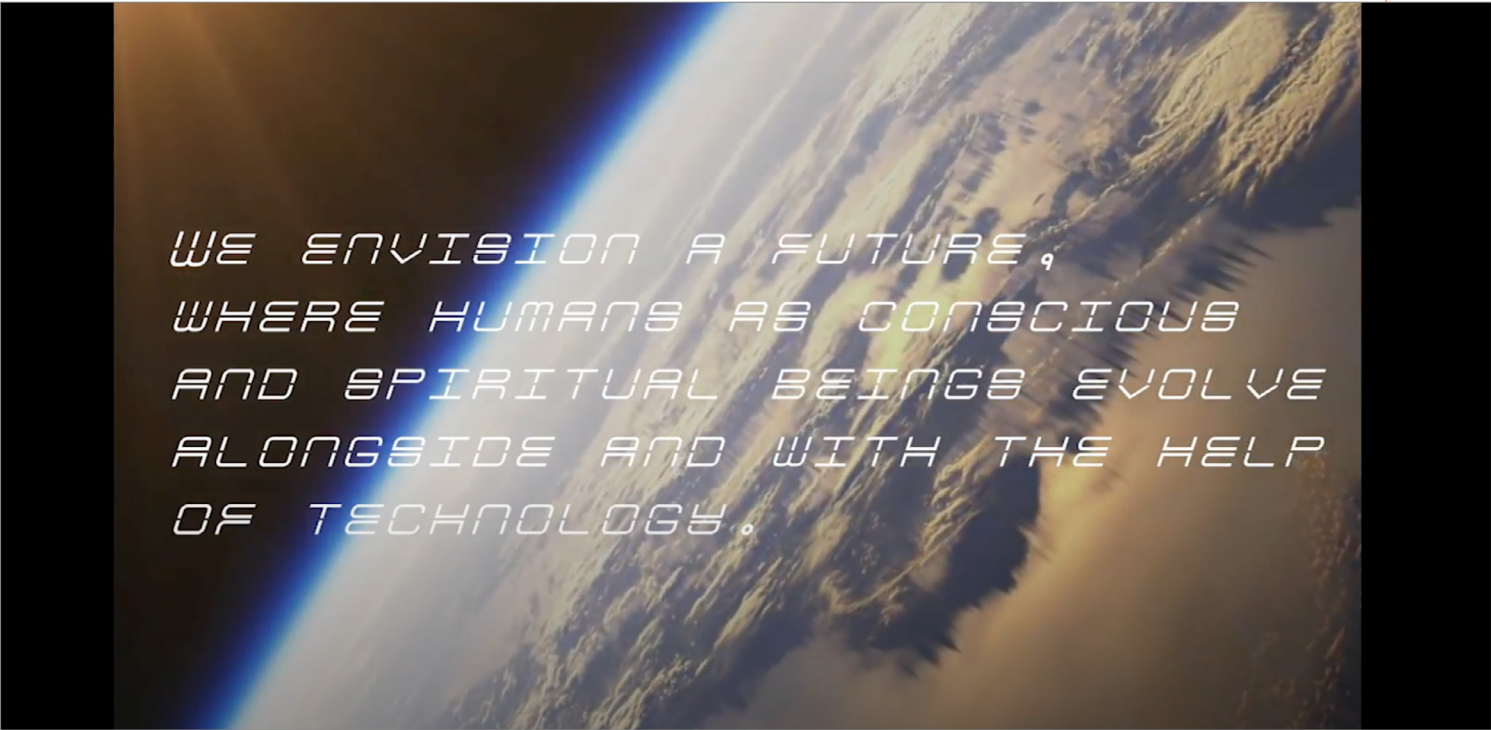
- Bratton, B.H. (2019). Further Trace Effects of the Post-Anthropocene. *Archit. Design*, 89, 14-21
- Johnson, E., et al. (2014). After the Anthropocene: Politics and geographic inquiry for a new epoch. *Progress in Human Geography*, 38(3), 439-456.
- Colebrook, C. (2017). We Have Always Been Post-Anthropocene: The Anthropocene Counterfactual. In Gruenewald, R. (Ed.), *Anthropocene Feminism* (pp. 1-28). Minneapolis: University of Minnesota Press.
- Meitz, S. (2019). Break Up the Anthropocene. *MBMGAT*, 1(1), 10000. University of Minnesota Press.



The input talks culminated in a presentation from Dr. Betti Marenko discussing ‘how we think about futures in relation to technology?’ as well as introducing the Future Philosophical Pills.

After a lunch break, participants were then split into preorganised groups based on their university of study and study programs, with an aim to facilitate cross-disciplinary collaboration. Working in the Miro space, participants were asked to bring an image that they felt describes ‘futures’ in 2050 and give it three key words as a basis to introduce themselves to the rest of their group. Participants then collectively chose an image to brainstorm with the Pill and a chosen ‘Affective Mode’. Reference material for each Pill was provided to each group and they were asked to investigate and fill the Miro workspace with images, quotes, thoughts, and discussions that related to their explorations. The synthesis of these explorations was the creation of a question for 2050 (this could be in the form of a research question, a design question or one for the future), one which each group would then build three-minute video scenarios for over the following two days [Figure 20].

▼ **Figure 21**
Still from Post Anthropocene scenario. (Image credit: Pras Gunasekera).



WE ENVISION A FUTURE,
WHERE HUMANS AS CONSCIOUS
AND SPIRITUAL BEINGS EVOLVE
ALONGSIDE AND WITH THE HELP
OF TECHNOLOGY.

Working online at times proved to be tricky for some students, which could be due to a blend of fatigue from working in Zoom for the last 12 months, as well as a desire to form teams in person initially before embarking on remote working. Session format here is important and offers different opportunities e.g., in person sessions do allow for more nuanced means of communication and online formats offer a broader reach (and number) of participants.

Equally, some participants felt an initial nervousness at jumping into conceptual practice as this may have been the first time (or one of few) where producing something open-ended and communicative vs ‘finished’ and ‘in the now’ was the brief. Having some contextual information about the participants (study programs, etc.) is

useful as this can help to guide how to format and structure the creative sessions to allow participants enough time to engage with their creative skills and to develop ideas (e.g. three-day event to sessions spread over a week or to a module length).

The event culminated in a showcase of groups' scenarios [Figures 21 & 22], prize giving and closing remarks. Post event, participants were asked to fill out a short feedback survey which focused on current experiences and feedback to improve the modes of engaging with the Future Philosophical Pills, below are a few responses

'What if anything did the FPP allow you to do that you may not have been able to do before?'

'Trying to think and approach a topic from a different point of view; thinking about time and its (non)-linearity as a factor in development of things. - Evoking different lines of thought and discussion through different lenses - The pill of Decolonizing Design as an intriguing topic.'

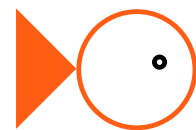
And

'What new skills and knowledge did you learn that you might apply in your study program and in future projects?'

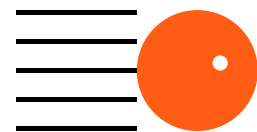
'Particularly interesting insights from the talks on the first morning - Thinking beyond 'what is here and now' and towards a variety of possibilities - Considering the impact a decision, development, or a design in the 'now' could have on a possible future.'

References

For additional and comprehensive reference to source material used in the FUTURES PHILOSOPHICAL PILLS, please see Pill Reference Material by Cluster: [Link ↗](#)



▼ **Figure 22**
Still from
Counterfactuals
scenario. (Image
credit: Pras
Gunasekera).



PART II.
ELABORATING

VENTURING



103: DESIGN FUTURES SCOUTING



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





Design Futures Scouting through Making

Introduction

In this part of the project, scouting has been taken up as a means to develop alternative presents that can grow into scalable emergent futures [Figure 1]. This we have done within a Master's in Design for Emerging Futures (IAAC-Elisava) in which exploring pedagogies and practices of design futures literacies has been central.

How can we engage as designers with actual wicked, multi-dimensional, ecosystemic crises?

How can we, as design education professionals, prepare new generations to position themselves against these challenges, gain agency and develop design interventions that bring about the urgently required changes?

Ultimately, how can design be a vehicle to build hopeful future scenarios that offer alternatives to the over-abundant apocalyptic narratives we are immersed in?

The above questions have guided the design research on tools and strategies on futures scouting through making [Figure 2]. They have drawn from experiences gathered in the Master's in Design for Emerging Futures (IAAC-Elisava) (Diez and Tomico 2020) and Angella Mackey's (2021) doctoral dissertation.

The following sections propose novel design education methodologies that can give actual agency to professionals and students seeking to engage in these current crises, turning the envisioning of possible futures into a real exercise of actively modifying the present through the power of making with others.

Approaching multi-dimensional, eco-systemic crises by personal and embodied means of speculating through situated anticipatory practices

Building upon the research done on autoethnography (Ellis et al., 2010), autobiographical design (Neustaedter & Sengers, 2012), material speculation (Wakkary et al., 2015), embodied ideation (Wilde et al., 2017), materialist ethnography (Schadler, 2017), micro-phenomenology (Prpa, et al., 2020), we explored a more personal, embodied way of speculating that welcomes diversity through dialogue and participation, is resilient and adaptable, supports reflexivity and a personal positioning, all through situated

DESIGN FUTURES SCOUTING

A First Person Perspective (1PP) approach to futures scouting through making

In the current predicament of climate emergency and systemic crisis, future studies, forecasting and trend analysis are offering interesting frameworks and strategies that can be used in design education programmes that are committed to sustainable and regenerative development.

Almost everyday now in this first quarter of the century, incoming data about ecosystemic collapse and inequality has been offering a wide range of apocalyptic scenarios which urge us to implement changes in how we do almost everything, but, how can we engage as designers in such wicked, multi-dimensional crises? How can we as design education professionals prepare the new generations to position themselves against these challenges, gain agency and develop design interventions that bring about the changes that are urgently required? And ultimately, how can design be a vehicle to build hopeful future scenarios that offer alternatives to the over-abundant apocalyptic narratives we are immersed in?

These are the questions that have guided the tools and strategies presented below. They propose novel design education methodologies that can give actual agency to professionals and students seeking to engage in these current crises, turning the envisioning of possible futures into an actual exercise of actively modifying the present through the power of making with others.



First Person Perspective



Futuring Through Alternative Presents



Biographies and Trajectories



LANDSCAPE OF FUTURES

When engaging in design projects that use futures research as a way to envision and prototype better alternatives to current presents, it is oftentimes necessary to count on concepts and strategies that can aid the designer in situating themselves better in the uncertainty that working with unknown futures can present. Here, we present a toolkit and a methodology that can offer a starting point to navigate uncertainty, leveraging weak signals as vectors of possible areas of change, offering keywords, concepts and relevant areas of research to start from, and ultimately, serving as a map of possibilities where the designer can find where they can start to enquire.

ATLAS OF WEAK SIGNALS

ALTERNATIVE PRESENTS



TOOLS AND METHODOLOGIES

We have stated how important it has been in our research to investigate how we can take future scouting beyond speculation, hybridising it with the power of making and the responsibility acquired by a First Person Perspective (1PP). This, in order to offer a novel route for design research practice and education. Here we compile exercises and assignments that can lead to design actions, interventions, initiatives and projects that aim at turning future speculations into actual responsible alternative presents that can grow to become scalable emergent futures.

SELF-REFLEXIVE ACTIVATIONS

1PP DESIGN INTERVENTIONS

DESIGN SPACES

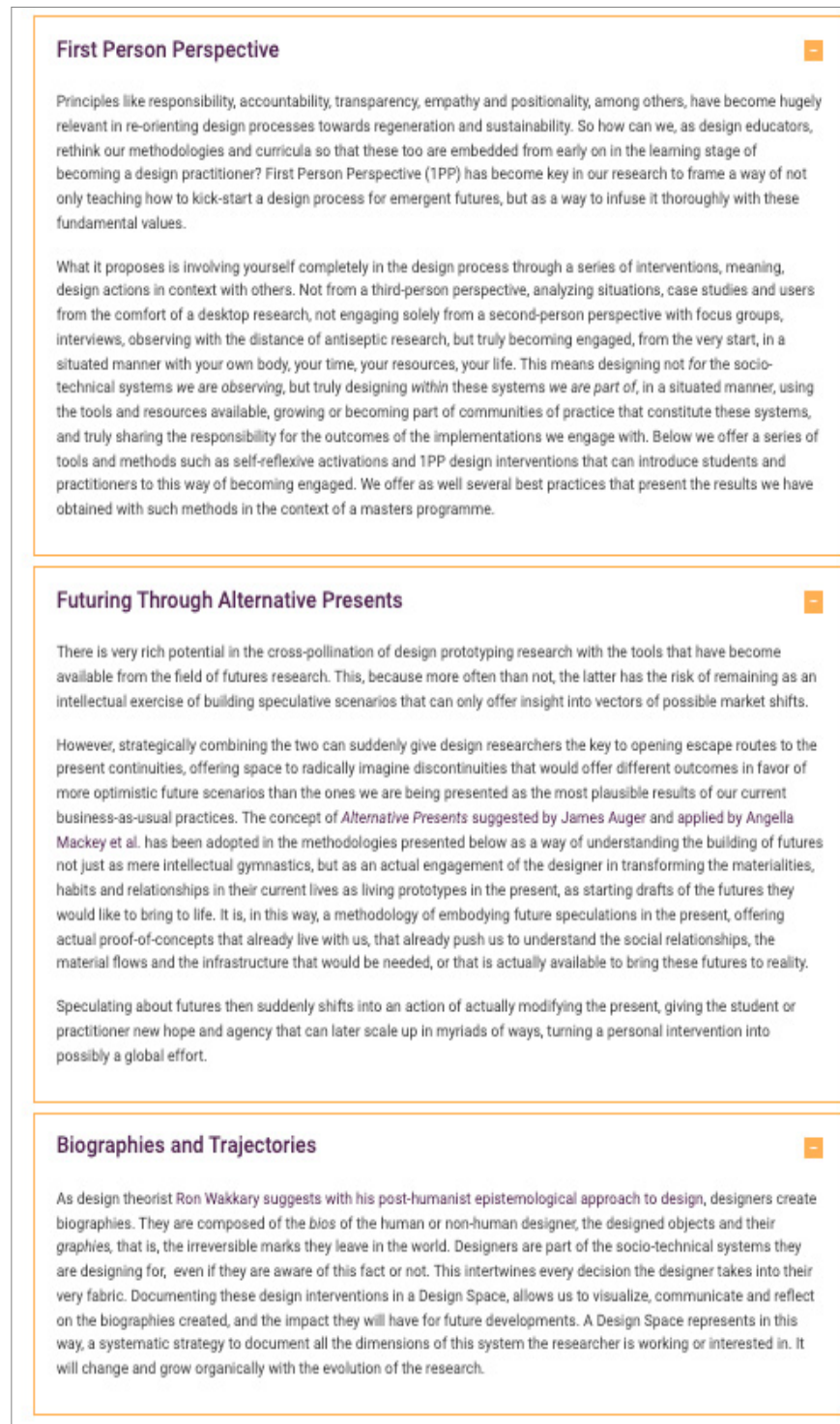
NEWS FROM BLOG

Exploring Weak Signals to Design and Prototype for Emergent Futures

anticipatory practices. During the 2018/19, 19/20 and 20/21 editions of the Master's in Design for Emerging Futures program, exemplars of future scouting through making were collected, analysed and used as class material. Each iteration helped create the body of knowledge presented in this section.

In the FUEL4DESIGN project we have developed further these experiences and modes of working. The knowledge from each iteration from the students and drawing from class analysis have gilded the process of producing a set of proto-tools and guides for futures scouting.

◀ **Figure 1**
Outline of main
topics in I03
DESIGN FUTURES
SCOUTING,
FUEL4DESIGN.
[Link](#) ▶



◀ **Figure 2**
Elaborating on
key categories,
I03 DESIGN
FUTURES SCOUTING,
FUEL4DESIGN. [Link](#) ▶

Design scouting through making proposes to carry out research through design, showing the relation between theory and practice related to the experiential, in designing futures literacies (Clèries & Morrison, 2020). It aims to take futures scouting beyond speculation (Blythe, 2014), hybridising it with the power of making and the responsibility acquired by a First-Person Perspective (1PP) (Desjardins, et al., 2021).

Tools and methods used in gathering and framing modes of scouting, such as 'List for Words', 'Atlas of Weak Signals', 'Horizon Scanning Canvas', 'Pestle', 'Cipher' or 'Future Forces', are combined with making and enacting modes, using for example '1PP Design Interventions', 'Provotypes' or 'Alternatives Presents' [[→ SEE IO3 Tools and Methods](#)].

Through design actions, interventions, initiatives and projects, we aim at turning future speculations into actually responsible alternative presents that can grow to become scalable emergent futures.

Modes of Scouting: Gathering and Framing

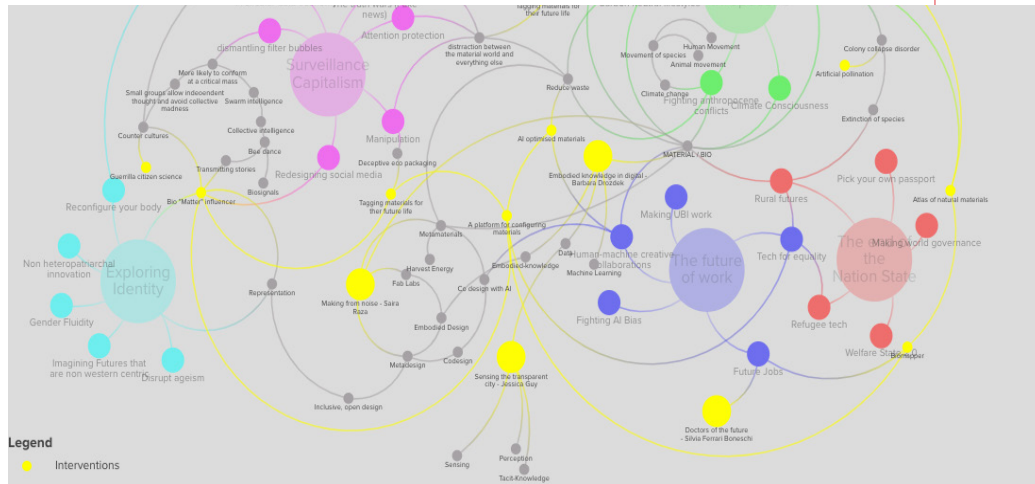
In this approach, self-reflexive activation as gathering and framing is key for the practitioners to create awareness within the contexts and scales they are inhabiting, their constituency (Wakkary, 2021). In addition, infusing the design process thoroughly with fundamental principles like responsibility, accountability, transparency, empathy and positionality. The aim is to aid the designers to situate themselves better within the uncertainty that working with unknown futures can present and enable them to identify potential intervention opportunities.

As an example, designers can start by gathering, framing and situating weak signals relevant to the topic or issue of interest being explored (Hiltunen 2008, 2010; Juselius 2012). Weak signals are early indicators of change that can potentially trigger significant events in the future [[Figure 3](#)]. Its mapping constitutes a landscape of futures that acts as a framing and positioning to analyse current systems and start to enquire to build possible scenarios (as an example, see Clèries & Peña 2020 for a report on early indicators).

The Atlas of Weak Signals

The 'Atlas of Weak Signals' serves as a visible methodology and structure to situate designers' practice, enabling them to start identifying potential intervention opportunities [[Figures 4–6](#)]. It offers primary keywords for research and experimentation and provides a starter design space to gain confidence and direction on where to begin (Diez, Tomico & Quintero, 2020). Collecting and organising a representative group of weak signals (1) that can describe possible vectors, discontinuities, and emerging casualties can serve as a keyword taxonomy that offers a starting ground from which to analyse current systems and build possible scenarios. The tool has been gamified and developed into a deck of cards (2).

Figure 3 ►
Class exercise 3 dynamically visualising four student projects (Making from Noise by Saira Raza, Doctors of the Future by Silvia Ferrari, Sensing the Transparent City by Jessica Guy, and Embodied Knowledge in Digital by Barbara Drozdek) and their possible interventions (in yellow) related to the 25 weak signals and the five major groups of weak signals (blue, red, purple, green, and fuchsia networks). Brainstormed associated keywords were added in grey. Master's in Design for Emergent Futures (ELISAVA, IAAC). Image credit: ELISAVA).



▲ Figure 4
The Puerta Project, machine learning literacy for children and teachers by Oliver Juggins. Weak signals: human-machine creative collaborations, new jobs, fighting AI bias, tech for equality, fighting Anthropocene conflicts. Master's in Design for Emergent Futures (ELISAVA, IAAC). Class exercise 3 dynamically visualising four student projects (Making from Noise by Saira Raza, Doctors of the Future by Silvia Ferrari, Sensing the Transparent City by Jessica Guy, and Embodied Knowledge in Digital by Barbara Drozdek) and their possible interventions (in yellow) related to the 25 weak signals and the five major groups of weak signals (blue, red, purple, green, and fuchsia networks). Brainstormed associated keywords were added in grey. Master's in Design for Emergent Futures (ELISAVA, IAAC). (Image credit: ELISAVA).

Notes:

1. For the online Table of Weak Signals see: [Link](#) ►
2. The cards can be downloaded at: [Link](#) ►

Figure 5 ▶
Alternative
Presents as Weak
Signals. IO3 DESIGN
FUTURES SCOUTING,
FUEL4DESIGN. [Link](#)

Alternative Presents as New Weak Signals

The following projects are the result of the Masters in Design for Emergent Futures 2019/2020 class. Evolving over the course of nine months, they show the evolution and application of all the methodologies presented here in this toolkit, from the first Design Space based on the Atlas of Weak Signals to the iterative consolidation of projects inserted in actual communities of practice, which present and provide new alternative presents in the different range of areas of interest the students immersed themselves in.

The projects are presented here in five different categories, which are new weak signals that the students curated themselves, as an evolution of the weak signals which they departed from. They speak about relevant trends, interests and efforts at the intersection of the vastly diverse typologies of research and topics that the students engaged themselves with.

Crafting Education(s)

These projects look at contemporary methodologies of creativity and learning to empower citizens to discover new professional paths and become hybrid profiles of the future.



Farm Academy
Pablo Zubaga - Colombia

Project Description

Project Link



Radical Imaginations
Daphne Genodimou - Greece

Project Description

Project Link



Augmenting Creativity
Ching-Chia Renn - Taiwan

Project Description

Project Link



Imagine Future of Jobs
Wongathorn Choonavan - Thailand

Project Description

Project Link

Intranatura

How can humanity rebalance its relationship with nature, microorganisms and our own bodies? Intranatura presents interventions to rebalance human-nature relationships for regenerative societies.



Organic Matters
Laura Preiss Conde - Spain

Project Description

Project Link



Balconnect
Adel Savary - Hungary

Project Description

Project Link



#Gardenfit
Magdalena Mojciuk - Poland

Project Description

Project Link



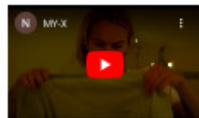
Kira Healing Nature
Juanita Pardo - Colombia

Project Description

Project Link

Incrementalism

Redefining Relationships highlights the effects of our interactions with the industrialized and digitalized society, challenging our habitual processes for emergent societies of the future.



MY-X
Natalia Barankova - Slovakia

Project Description

Project Link



Data Diet
Caroline Ridd - USA

Project Description

Project Link



Breaking Free
Elas Cardullo - Mexico

Project Description

Project Link

Metamaking

The maker movement has given rise to societies of collaborative production and collective infrastructures. Metamorphosis seeks to establish new methodologies and circular methods of consumption and distribution.



Urban Fabrication
Zoe Toka - Greece

Project Description

Project Link



Ta'Awon
Hala Amer - Jordan

Project Description

Project Link



Making Meaning
Mihale Parikh - India

Project Description

Project Link



Wasted Wastes
Georgia Restou - Greece

Project Description

Project Link

Alternative Presents as Weak Signals

Self-reflexive activations exercises

Designers are influenced by the contexts, materialities, infrastructures, power structures, social bonds and motivations that they embody throughout the day. These, in turn, are always shifting, creating ever-evolving 'new normals' in which we can develop our futures scouting. To bring these inter-relations into awareness in the practice we have worked on different self-reflexive activations exercises (3) that invite participants to reflect on who they are as agentic actors constantly related, limited, shaped by and encouraged by the different elements in the socio-technical systems they are part of.

FUEL4 DESIGN

MODULESRESEARCHEVENTSBLOGABOUT

Self-Reflexive activations (positionality, boundaries, network)

Here we present a few assignments that are aimed at creating awareness in the practitioners on the contexts and scales they are inhabiting and their positionality in them. The routines they are following. The infrastructure, social connections and tools that could become relevant to them. Ultimately, the motivations and interests they are bringing to the research they are starting.

My new me

As practitioners, we are influenced by the contexts, materialities, infrastructures, power structures, social bonds and motivations that we embody throughout the day. These, in turn, are always shifting, creating ever-evolving "new normals" in which we develop our practice and ourselves. How can we bring these inter-relations into awareness in our practice? The following activations invite the participant to reflect on who they are as agentic actors constantly related, limited, shaped by and encouraged by the different elements in the socio-technical systems they are part of.

A day in my life

+

What's your fight?

+

My new augmented context

To be able to engage in futures scouting from a First Person Perspective (1PP) it is fundamental to gain awareness of the tools, materialities, infrastructures, communities of practice and social networks that are part of the socio-technical system we are designing with. The following exercises offer a methodology and a system to develop and document these references and relationships.

Hyperconnected and hyperlocal workspace

+

Multi-scalar mapping

+

My community of practice

+

▲ **Figure 6**
Self-Reflexive activations (positionality, boundaries, network). IO3 DESIGN FUTURES SCOUTING, FUEL4DESIGN. [Link ↗](#)

Example of gathering and framing

Morgane Sha'ban's 'Hybrid Play' project (Master's in Design for Emergent Futures, 2020/21) will serve as an example to illustrate these self-reflexive activation exercises. 'A day in my life' is an assignment that invites participants to actively reflect on how their current spaces, routines, connections and habits are shaping them personally and professionally. In addressing it, Sha'ban illustrated the most important things and activities that are shaping her personally and she would like to bring to her design practice. She called it 'my magic ship' as a way to navigate a difficult topic to deal with (ecological collapse) [Figure 7].

In 'What's you fight', each participant is asked to bring a poster with an image, illustration or picture that represents their fight, meaning, any issue, concern, cause or particular interest they feel strongly about. When working with a group, not only is this a way to start meeting each other, breaking the ice, but also a means of starting the process of finding resonance to form possible collaborations. For teachers and facilitators, it presents an opportunity to start observing the areas of interest in the group as a whole, but mostly, this strategy ultimately represents a prompt for the practitioner to actively reflect on what they care about, and find fertile ground on which to start inquiring. For example, Sha'ban represented the intersection of the topics she most cares about. Some of them being ecological collapse, urban spaces, education, ecofeminism, activism and regeneration [Figure 8].

Modes of Scouting: Making and Enacting

Using a First-Person Perspective (Smeenck, Tomico & van Turnhout 2016; Hornecher, Marshall & Hurtienne 2017; Hook et al. 2018; Lucero et al. 2019; Desjardins et al. 2021) in futures scouting through making means involving yourself entirely in the design process through a series of interventions, co-creating design actions in context with others. This means designing not for the socio-technical systems we observe but for the socio-technical systems we inhabit. Designing like this in a situated manner, using the tools and resources available (see, for example, Brandt, Binder & Sanders 2013), growing or becoming part of communities of practice that constitute these systems, and truly sharing the responsibility for outcomes of implementations with which we engage. As a third-person perspective relates to gathering information without getting involved, and a second-person perspective is about designing with a sample of the target group, in a first-person perspective, designers are part of a system within the existing social structures, and the act of designing becomes personal.

In 1PP design interventions, designers use autoethnography and autobiographical design to create personal visions to design for the unknown and actuate into the future, through a reflective and transformative design process (Hummels et al. 2009; Lucero 2018). These ways of designing require continually reassessing relationships between people, places and purpose to better understand and respond to the complex interplay of needs and values in situ. This helps designers to grasp the socio-technical

Note:

3. Descriptions of all the exercises mentioned here can be found at: [Link](#)

system they are part of and understand their process of drifting in research through design.

This approach to future scouting engages designers in transforming the materialities, habits and relationships in their current lives. One's practice, therefore, has the potential of becoming living prototypes of the present as starting points for the futures they would like to bring to life (Buchenau & Suri 2000).

Figure 7 ▶
Sha'ban's 'My
magic ship'
illustration.
Master's in
Design for
Emergent
Futures
(ELISAVA, IAAC).



To be able to engage in futures scouting from a 1PP it is fundamental to gain awareness of the tools, materialities, infrastructures, communities of practice and social networks that are part of the socio-technical system we are designing with. Implementing a 1PP in a design process will necessarily involve the practitioner's own life as the ground of active prototyping. This is why, a deeper inquiry into the infrastructure and limitations will be helpful to start framing the spaces and tools that will become part of their practice. This project has developed self-reflexive activation exercises that offer a methodology and a system to develop and document these references and relationships.

Example of enacting

In 'Hyperconnected and hyperlocal workspace', participants are encouraged to expand their notion of what their workspace is, understanding that it goes way beyond their desk or the lab in the university; that their hyperlocal and hyperconnected workspace can consist of their kitchens, the urban garden next to their apartment, the restaurant



◀ Figure 8
Sha'ban's
'My fight'
illustration
Master's in
Design for
Emergent
Futures
(ELISAVA,
IAAC).

in their neighbourhood, their closet, their balconies, their leisure spaces, the sewing machine at their mother's home, a digital community elsewhere in the world... and so many other possibilities. Observing our habitual spaces with this new set of eyes might bring into awareness how rich our environments are to become part of our working and prototyping infrastructure.

In this exercise Sha'ban divided in two illustrations the tools that had become available to her and the ways of communication that she could use due. In both illustrations she combined tools and infrastructure that were available in the lab but also at her place. Her project was about creating biomaterials and this exercise helped her to realise that most of the tools she needed were available in her kitchen [Figure 9].

'Multi-scalar mapping' exercise aims to provide the basis of a Design Space that will be the most important tool for the rest of the 1PP research process. When designing for current crises and emergent futures, oftentimes the student or practitioner might feel disempowered in the beginning. They might feel like they don't have the tools, the

agency or the capacity to change things, to propose actual different ways of doing, or that what they care about is far away from their scope of influence or action. Powerful in its capacity to reverse this perspective, the multi-scalar mapping activation might show



▲ **Figure 9**
Sha'ban's
representation
of her
'Hyperconnected
and hyperlocal
workspace'.
Master's in
Design for
Emergent
Futures (ELISAVA,
IAAC).

them how almost any topic of interest in our inter-connected system might be seen in all scales, from our bodies to our planet, offering a wide range of actual possibilities of action. As an example, species extinction can be seen in the body, in the actual diminishing of microbial species in our microbiome, but also in our balconies decorated with imported plants that don't support local species biodiversity, or can be affected by urban landscaping in our neighbourhoods, or the state of biodiversity in our bioregion.

Participants are then asked to take the issues they are concerned about or weak signals of possible futures they have detected and take them in an embodied exercise of reflection on how they might be present from the scale of their bodies, to the scale of their regions. Participants are asked to engage in a hike and/or a journey that takes



Figure 10
 Sha'ban's
 'Multi-scalar
 mapping'.
 Master's in
 Design for
 Emergent
 Futures
 (ELISAVA,
 IAAC).

them from their home to the outermost part of their city or region, documenting in a diagram infrastructure, issues, topics, people, situations and insights that reflect their chosen matters of concern. We do it as a group or they can complete it in smaller groups or on their own. Sha'ban, after three months, visualised all the interventions, communities, prototypes and references she had been working with, in different scales. From her inner experience, to the other people she collaborated with closely, and lastly, to the outer circle of tools, global communities and references that she had been looking at [Figure 10].

'My community of practice' is an activity where participants are encouraged to identify and reflect on the communities of practice they are forming or where they are being inserted into with their research. Sha'ban's research involved different activities or design actions that would require collaborating with other kinds of communities of practice [Figure 11].

By embodying future speculations in the present, designers can offer experiential-related, actual proofs-of-concept that already live with us (Desjardins and Wakkary, 2016) and strategies for community engagement concerning cooperative modes of futures, allowing for experiencing futures with others. In doing so, futures scouting becomes a design intervention in context. Designers can generate alternative presents (Auger 2010; Mackey et al., 2020) through design interventions that embody desired futures. These exemplify the need to provoke these transitions.

A 1PP design intervention can be based on exploring the possibilities of a personal extreme challenge; a transformation on the person's behaviour, identity or personality traits to gather reactions; pushing non-human agency to the limits and collaborate

with things; zooming in on specific details of personal activities; exploring the roles of technology to augment personal activities; or projecting oneself into a future context he or she is envisioning (4).

Examples of Making

By positioning design action closer to the researched issues or topics, designers can identify trends, weak signals and drivers of change. This 'immersive scouting' through making is connected to possible design actions, through which designers can explore and be aware of their agency to shape futures possibilities and probabilities. They comprehend the plurality and richness of futures and develop an awareness that futures are generative and performative.

The alternative presents generated through interventions can act as new weak signals for subsequent futures scouting. As an example, interventions performed in the context of the Masters in Design for Emergent Futures 2019/2020 class speak about relevant trends, interests and efforts at the intersection of the vastly diverse typologies of research and topics that the students engaged themselves with. Four new weak signals were detected – 'Crafting education(s)', 'Intranatura', 'Incrementalism', or 'Metamaking' – by analysing and clustering the results of the student's interventions (5).

'Crafting education(s)' projects look at contemporary methodologies of creativity and learning to empower citizens to discover new professional paths and become hybrid profiles of the future. For example, Ching-Chia Renn's project 'Augmenting Creativity' explores the opportunities of collaborating with Artificial Intelligence in a creative process and expression: not only makes creators know about the possibility of applying AI in creative practice, but also provides them tools to actually learn machine learning and have the ability to use them.

'Intranatura' presents interventions that question the way humanity rebalances its relationship with nature, microorganisms and our own bodies for regenerative societies. Magdalena Mojsiejuk's '#Gardenfit' aims at rethinking our cities and leisure, by wondering if we would change perceptions and attitudes, reconnect with public spaces, and get more food sustainable if we make the effort, energy, and money used on fitness and channel it into gardening.

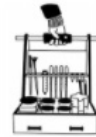
'Incrementalism' highlights the effects of our interactions with industrialised and digitalised society, challenging our habitual processes for emergent societies of the future. 'MY-X' by Natalia Barankova aims at providing a vision of a new fashion system built on circular collaborative mass-customisation, through connection of citizens and their resources and emergence of local micro factories. Its main part is a tool, designed to prolong the life cycle of clothing through its deconstruction and consecutive customised reconstruction by means of parametric design, digital fabrication and sewing.

Notes:

4. Examples of these kinds of interventions can be found at: [Link ↗](#)

5. Information and videos of those can be found at: [Link ↗](#)

Figure 11 ►
 Sha'ban's
 'Communities of
 practice'. Master's
 in Design for
 Emergent Futures
 (ELISAVA, IAAC).



Community of practice who
 are hybrid craft experts:
 Fablab Barcelona; Inés Burdiles
 Araneda, Santiago Fuentemilla,
 Xavier Domínguez, Anastasia
 Pistofidou, Dafni Gerodimou,
 Oliver Juggins, Sara González



'Metamaking' addresses how the maker movement has given rise to societies of collaborative production and collective infrastructures, and seeks to establish new methodologies and circular methods of consumption and distribution. The 'Ta'Awon' project, by Hala Amer, wanted to call for cultural intelligence and ethnic equality through the processes of making in the context of large-scale migration and displacement crises, merging the local host communities with the 'displaced' new communities and encouraging collaboration in the context of a Maker Space.

Ways of drifting for futures scouting

On ways of drifting

Exploring early future signals in the present to create alternative scenarios of current realities is not a straightforward process. Students, researchers and practitioners can engage with it in various forms. Krogh et al. (2015) propose 'ways of drifting' as a typology for different ways of engaging exploration. They describe the journey of building up knowledge from an unexplored design terrain. The formalisation and deployment of a set of design interventions in the context of interest define these drifts. In future scouting through making, acknowledging the process towards an alternative present relates to the situatedness of the project, to its biography (Wakkary, 2021), and what unexpected insights emerged in the process of designing.

Krogh et al. (2015) identify five ways of drifting: accumulative, comparative, serial, expansive and probing. They help to visualise and clarify different modes of scouting and ways of working. They are not exclusive, and it may well happen that a design project switches between different typologies.

Examples of Drifting and Futures Scouting

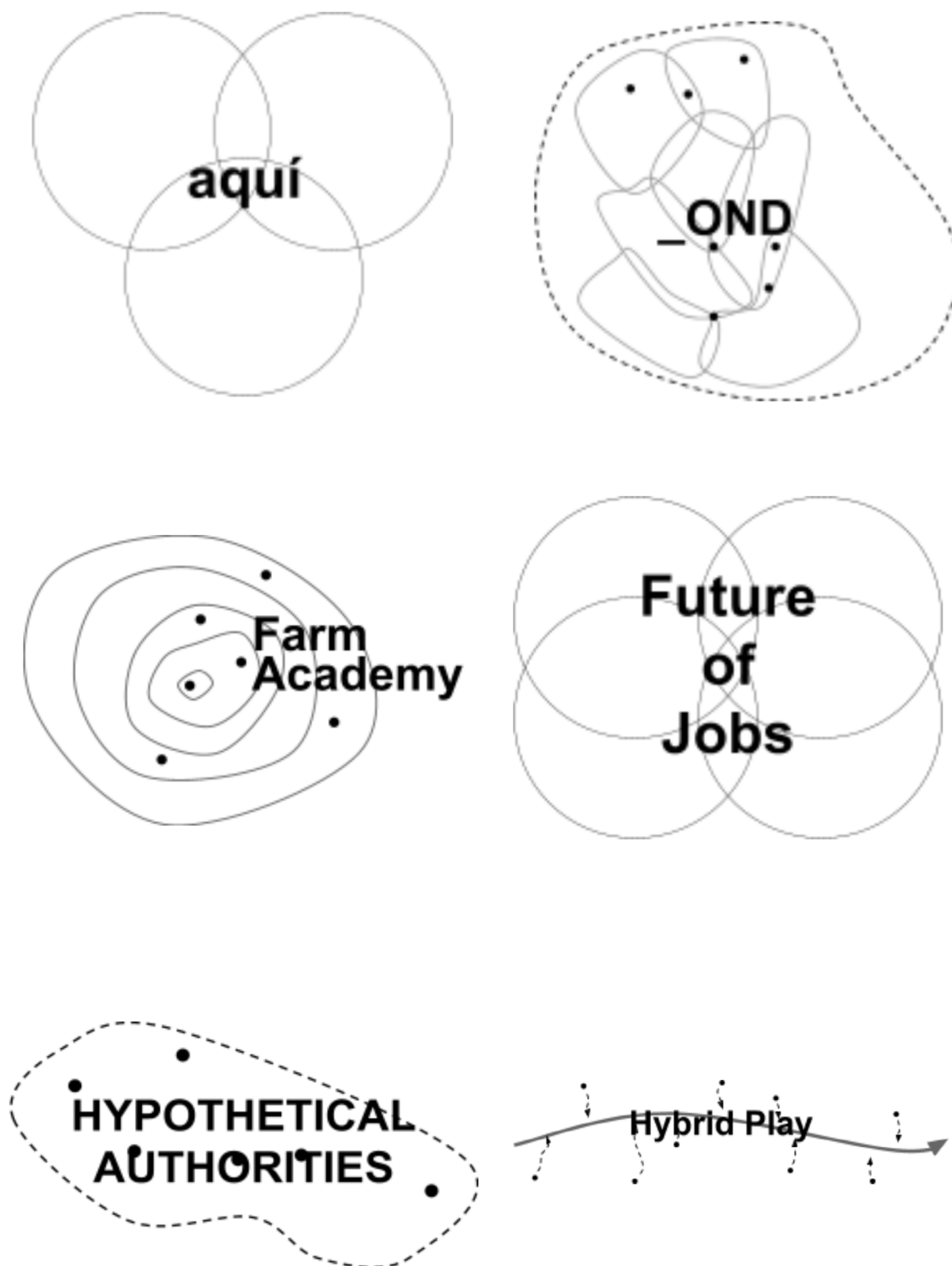
We refer to various students' projects from the Masters in Design for Emergent Futures (IAAC-Elisava) to exemplify these five modes of exploration [Figure 12]. Afterwards, the examples are described in order to aid in conveying these different approaches.

Accumulative: This would be the most traditional mode of exploring. It builds knowledge by focusing on specific aspects of the design activity that is being pursued. It allows for a deeper understanding of the topic. An example could be Pablo Zuloaga's project, 'FarmAcademy' (see below). He began his futures scouting research with a broad topic, farming and its adaptation to the climate emergency and weather changes. He gradually focused and narrowed the scope of his project as he advanced into his journey, first by engaging with technology and later by adding education. His drifts were accumulative, and every layer of exploration kept adding new knowledge to his futures investigation towards presenting an alternative present and speculating on its future materiality that embodied the complete expertise accumulated in the process.

Comparative: It consists of a central design case that is constantly re-seen/ re-investigated through different lenses. A series of design activities inserted into other contexts. It keeps giving designers different qualities within their interest. It is framed as 'acknowledging for complexity' as it embeds various situations where design happens. Wongsathon Choonhavan's project, 'Imagine Future of Jobs' [→ SEE Essay 7, Volume 2] had a clear central focus on the rapidly changing peace of professional identities and how children could adapt (using imagination) to define their future careers. He tested the same idea in four different contexts: education, play, random inquiry and exhibition. Testing the same concept in different contexts unlocked new knowledge to incorporate into his project. On the other side, Clément Rames' project, 'aquí' – here, in Spanish/Catalan – approached wicked problems such as social polarisation and alienation and related them to social-environmental justice. He engaged his research from three different contexts (pedagogy, transformational design, and urbanism and mobility), and his project emerged from their intersection.

Serial: In this typology, design interventions follow a particular order. They are informed by how previous design activities influence each other. Each stage generates the next one and raises questions to work forward. Morgane Sha'ban's project, 'Hybrid Play' [→ SEE Essay 6, Volume 2] started from a personal affiliation found at the intersection of the psychological and environmental crisis. She started her research by exploring soil and our connection with the environment from a 1PP. Then, she moved towards soil and education, which led to education and play, play and crafts, and finally to crafts and biomaterials. Sha'ban integrated biomaterials crafts into the Montessori alternative educational system and developed a large-scale game with and for children.

Expansive: This typology aims to identify and explore an area of interest by design activities to reveal the qualities of the 'regions' uncovered. Unlike in 'serial', there is no successive order or direction followed. New experiments and knowledge appear as the area is expanded. Anais Bouvet's scope of research, '_OND', kept growing with different 'regions' of interest revealed from new design interventions [→ SEE Essay 5, Volume 2].



▲ **Figure 12**
Representations of
different ways of
drifting from the
students. Master's in
Design for Emergent
Futures (ELISAVA, IAAC).

Her first interventions were in urban gardens and sea protection organisations. She later engaged with soil, waste, fashion, materials, and self-care. All these regions of investigation defined a significant area related to personal and planet well-being. Most of her design interventions could be situated in intersections between different regions, meaning that each intervention had a different context that would open new interests as they were being deployed.

Probing: It exploits opportunities as they emerge. The research can be characterised as 'illogical', 'artistic', or 'impact-oriented'. It is informed by personal motivations and pursuing opportunities in a specific environment. Krzysztof Wroński's project, 'Hypothetical Authorities', had a clear area of interest pre-defined [[→ SEE Essay 4](#)]. He was interested in the role of authorities, how they emerge, how they are sustained and how we can 'design' them. He engaged in various design activities (or probes) such as participatory workshops, roleplay, speculative artefacts, and hypothetical scenarios to explore the topic. These constituted a portfolio of interventions that highlight recurring and essential aspects in the area of research as well as foster curiosity in the field.

As mentioned, the selection of examples brought up in this section are projects undertaken in the Master's in Design for Emergent Futures. In this Master's program, futures scouting is taken up from the practice of design to understand its complex and plural character. Emergent futures are explored by integrating disciplines and points of view. This approach embraces the multidisciplinary nature of futures. Futures scouting is taken from a generative and performative practice. It is understood as iterations and combinations of 'possibles' that combine scenarios and multiply options, providing a 'landscape of futures'. Design projects become a driver or tool to materialise alternatives.

Designers could begin their futures scouting by gathering and framing evidence of the future in the present. In combination with personal interest and areas of opportunity, they can start making design interventions that would present alternatives to current dynamics. This is engaged from a proactive attitude, getting themselves involved personally in the design process as well as its outputs. Using a 1PP makes designers responsible and accountable for the futures they are projecting. The following examples showcase different ways on how students engaged in the process, how they related their interventions to each other, and drifted in their journey. The interventions were deployed as futures scouting methods, each one informed their final vision for an alternative present and also represented escape routes to the present continuities. Quotes from their reflections when documenting the process are used over this section to support the description of their practice.

Examples of students' projects: Ways of Drifting

Below we focus on the first two ways of drifting listed above (accumulative and comparative) that are illustrative of our approach and of student works. Four other student project examples for drifting – comparative, serial, expansive and probing - are included in later chapters in this book and in Volume 2: Comparative drifting is further covered in [Essay 7: Learning Design by Making Futures](#). Serial drifting appears in

Essay 6: Agency, Enactment & Design Future Literacies. Expansive drifting is included in **Essay 5: Care, Engagement & Design Futures Knowing.** Probing drifting is covered in **Essay 4: Time, Design & Anticipatory Learning.**

Pablo Zuloaga's framework and area of research was driven by his concern on how small farmers could adapt to the current climate crisis and its changes in temperature and seasons. In his Master's thesis, he states that he has 'a concern about the climate emergency and overpopulation in the world, and how this will affect the lives of farmers [...] by generating large losses in their harvests due to changes of temperature and natural disasters.' Using the 'Atlas of Weak Signals', Zuloaga defined his initial research scope from the weak signals: 'Rural Futures', 'Technology for Equality' and 'Human-Machine Creative Collaborations'. He also framed 'Climate Consciousness' as an overarching theme for his project. These weak signals allowed him to start identifying potential intervention opportunities to engage in his research.



◀ **Figure 13**
'FarmAcademy' by
Pablo Zuloaga,
accumulative
drifting
representation
Master's in Design
for Emergent Futures
(ELISAVA, IAAC). [Link](#) ▶

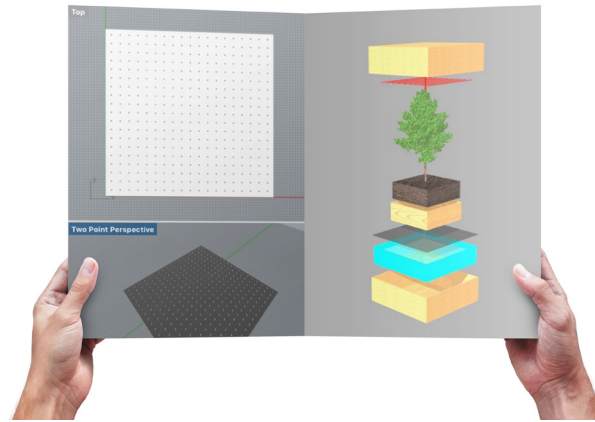
Zuloaga developed six interventions during the master's, identified in three accumulative layers leading to a final intervention and a speculative artefact embodying his alternative present. His first layer of exploration was meant to understand farming in general. He took a 1PP by 'Volunteering at an Urban Orchard' and taking part in a 'Permaculture Workshop', as well as getting in contact with a local rural organisation in Rupit (Spain) (6) that was undertaking a project named 'FarmLab' (7).

A new layer focusing on technology was added by bringing about his digital fabrication skills and helping them to 'Build and Install a Farmbot', an automatic farming system that can control small crops. After that intervention, Zuloaga realised technological interventions in farming had to be accompanied by education on new skills. Thus, he focused on how to teach the necessary abilities to promote the new models he sought to introduce. Because of the Covid-19 pandemic, his collaborations with the organisation were interrupted. In order to keep building up knowledge and develop his educational skills until he could return to his collaboration, he began 'Teaching Arduino Skills to Others'

His progressive focus in these accumulative layers led to his final intervention, 'FarmAcademy' [Figure 13], that presented Zuloaga's vision for an alternative present (8). FarmAcademy aims to contribute to making rural communities more resilient by introducing technology to their practice. It is an intent to create a distributed database that works as an aggregator of knowledge from different climates that can be incorporated in harvesting globally to adapt to future climate changes [Figure 14].

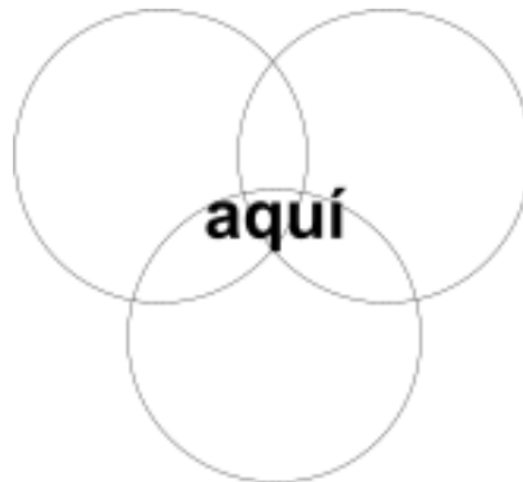
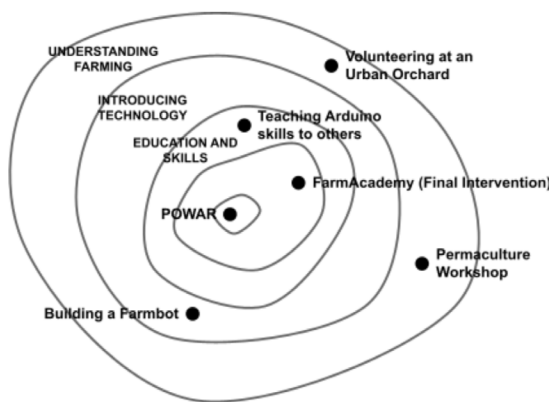


◀ **Figure 14**
'FarmAcademy'
platform
presentation.



◀ **Figure 15**
'POWAR' prototype
presentation.

▼ **Figures 16 & 17**
Pablo Zuloaga's
cumulative
drifting in
futures scouting
representation,
Aquí, Clément
Rames, Master's
in Design for
Emergent
Futures (ELISAVA,
IAAC).



As part of FarmAcademy he introduced educational kits by designing and prototyping a speculative object that embodied his alternative present, named 'POWAR'. Through a series of sensors, it recreates an environment and helps understand how different crops behave in different situations. The process of prototyping and testing POWAR allowed Zuloaga to enact his alternative present, resulting from his yearlong exploration [Figure 15].

Zuloaga's process of futures scouting through interventions deployed in a manner that exemplifies an accumulative drift [Figures 16 & 17]. He started by understanding the broader theme of farming and gradually kept refocusing his project on specific aspects of each layer. He added a technological aspect to farming, inquiring what technological

Notes:

6. See: [Link](#) ↗

7. See: [Link](#) ↗

8. The project's name was a pun using Farm and FabAcademy (a course of rapid prototyping and digital fabrication he undertook within the Fab Lab Network; see: [Link](#) ↗

elements could allow rural communities to become more resilient. In order to introduce it, he focused on education and skill sharing. This process led him to propose an alternative present that later was materialised into a prototype.

The various interventions Clément Rames undertook during his Master's project (9) were all toward exploring wicked problems including polarisation and alienation in society within the framework of environmental and social justice. At the end of the Master's, he founded an urban design collective in Barcelona. 'Aquí' uses tactical urbanism as a way of rapid prototyping to foster placemaking among neighbours.

To define his initial design space, Rames framed his research with the weak signals of 'Fight Anthropocene Conflicts', 'Technology for Equality', 'Long-Termism', and 'Imagining Futures that are Not Wester-Centric' from the 'Atlas of Weak Signals'. He was keen on the idea of 'planetary wellbeing' to drive his desired futures.

Rames deployed four different interventions in different contexts: pedagogy, transformational design, urbanism and mobility, and its intersectionality. He approached pedagogy from peer-learning discussion, by designing and experiencing a set of 'Participatory Design Workshops': two in the theme of sustainable mobility, two on the theme of environmental justice and one in placemaking/urban design. Their outcomes allowed him to gain knowledge on his interest, showed him the opportunities participation opens (as well as its limitations), and improved his skills as a facilitator.

In the context of transformation design, he took a 1PP becoming aware of his transformation from a technical engineer to a social designer. He experimented with embodied design ideation as an alternative mode of knowledge by co-facilitating with a classmate an intervention on 'Performing Systems and Transitions'. His exploration of transformational design was through self-reflexivity and by engaging in conversation with Daniel Rosenberg (2015). He also developed a public design intervention that used embodied design methodology, co-facilitating a workshop where participants were allowed to physically experiment abstract concepts such as relationally or emergence (10).

Rames also integrated his past as a researcher in urbanism and mobility and engaged in a series of interventions in the city that used psychogeography as a design tool and an alternative to traditional urban research. He spent a day performing as a city tourist guide to understand local's relation with Barcelona's intensive tourist extractive systems and its situated effect. He also collaborated with classmate Roger Guilemany by co-facilitating various dérives in Barcelona.

By taking a 1PP position in the city, Rames showed how we could develop an embodied and situated praxis that aided to explore invisible conflicts arising from the affective and political dimension of the space.

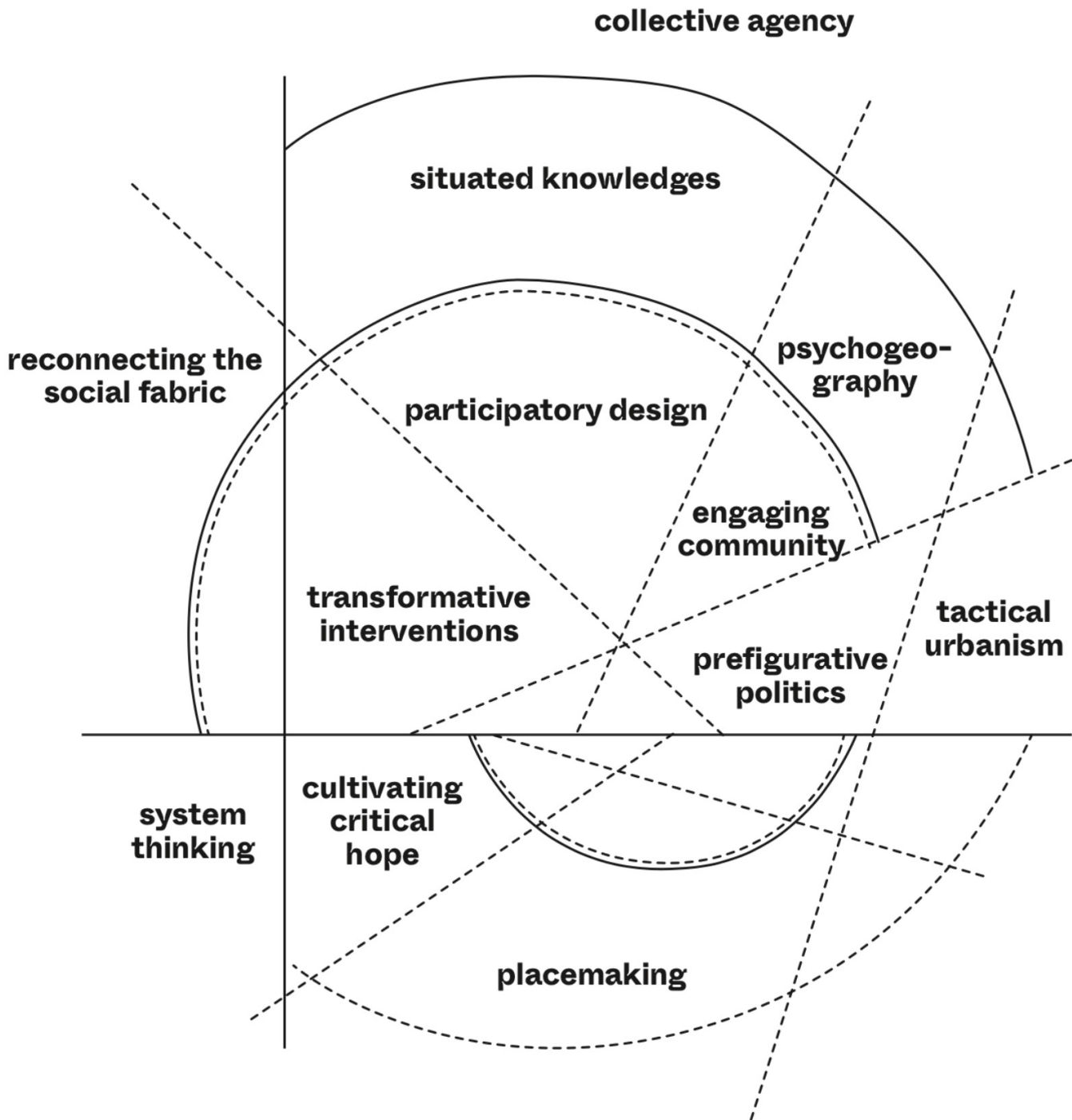
Notes:

9. Clément Rames's master's repository: [Link](#) ↗

10. For the workshop, Rames collaborated with his classmates José Uribe and Josefina Nano.

The knowledge and experience from each context allowed him to co-found the 'aqui' collective (11), and work in their first collective intervention in the city [Figure 18]. They proposed an alternative to current top-down urbanism politics by means of participation and co-creation, fostering a sense of ownership of the public space.

▼ **Figure 18**
'Aqui's' framework of practice by Clément Rames. Master's in Design for Emergent Futures (ELISAVA, IAAC).



They developed a series of participatory design workshops with neighbours to bring in their needs and co-design the future of the street [Figure 19]. From the outputs of the workshops, they designed a prototype that embodied neighbours' proposals and organised a co-construction event [Figure 20] to build and install the prototype, aiming to make neighbours become more connected with their urban environment. Rames developed his futures scouting process by intervening in his research framework from three different approaches: pedagogy, transformational design, and urbanism and mobility. The comparative aspect in his action-research process allowed him to gain knowledge from each one. His final project and his vision for an alternative present emerged from the intersectionality of these approaches [Figure 21].

Reflections

Generative and performative futures

These examples show how practising design can aid the understanding of the complex and plural nature of futures scouting. The projects presented enact a multidisciplinary approach to design. This allows designers to explore emergent futures by integrating disciplines, points of view or information from different angles. Design and design projects become the driver of future changes or a tool to materialise alternatives.

Approaching futures scouting from a generative and performative position allows us to understand possible futures as iterations and combinations. They can be explored by pushing to the extreme some emergent weak signals and applying them to future-oriented design projects (the process of questioning the concept 'what if?') or by crossing scenarios to generate and multiply options. It does not aim to produce one future but to provide a 'landscape of futures'.

Field research in the present has to consider evidence from past behavioural cycles and patterns, past trends and their sociocultural adoption, and previous designs of fictional scenarios to forecast futures accurately. From this position, we can observe and detect early future signals in the present and thus, act in the near and next futures to create challenging and alternative scenarios of present realities.

Alternative presents and the multiplicity in future scouting

These examples from the Master's in Design for Emergent Futures (IAAC-Elisava) show a range of alternative presents. Still, it is not only the outcome that is interesting but the process of getting there. These methodologies can provide new agency to professionals and students engaging in wicked problems that may feel overwhelmed at first. Through making, we can go beyond mere speculation and experience alternative presents that aid us to make sense of the futures we are creating and future challenges.

There is richness in the multiplicity of futures the selection of projects exemplifies. Designing and making in the present from a 1PP approach allows professionals and students to integrate personal matters of concern and create a personal involvement in the design interventions they put into the world when working towards meaningful and preferred futures.



◀ **Figure 19**
Clément Rames
facilitating a
co-construction
workshop from
his project 'aqui'.
Master's in Design
for Emergent
Futures (ELISAVA,
IAAC).

The common thread among the different journeys the students from the Masters in Design for Emergent Futures have taken is in the modes of scouting. Gathering, framing, making and enacting are at the centre of their different processes. We have illustrated how self-reflexive activations have been used to collect, frame and situate weak signals.

For instance, Zuloaga, on his interest in 'Rural Futures', got involved in an urban orchard and took a course on permaculture. This hands-on research unpacked more knowledge on his topic of interest and allowed him to continue his exploration towards proposing an alternative present. Alternatively, Wronski engaged with the idea of 'After the Nation-State' to reflect on his situation as a free-dweller in contraposition to people from other nationalities that he had met in the Mória refugee camp.

Experiencing tomorrows

1PP design interventions do not intend to design for the socio-technical systems we are observing but for the ones we are living. In other words, to design in a situated matter. Design interventions allow us not only to present alternatives but experience them.

This approach to futures scouting engages designers in transforming the materialities, habits and relationships in their current lives as living prototypes in the present. For example, Sha'ban's initial exploration of the intersection of the psychological and environmental crisis led her to spend 24 hours in contact with soil. This very personal experience embedded her in the natural system, connected her to the environment

Note:

11. In collaboration with another designer, Lea Karrasch, and the Barcelona City Council. See: [Link ↗](#)



as a wanderer in the wild, nurtured her consciousness of sacredness, the scale of wildernesses, and informed her future interventions. Bouvet sought to learn about the intersection of recycled materials, fashion and sea protection. She directly got involved at Ecoalf, a leading company working in this context, to learn from them how they work and build their networks around durability and fashion.

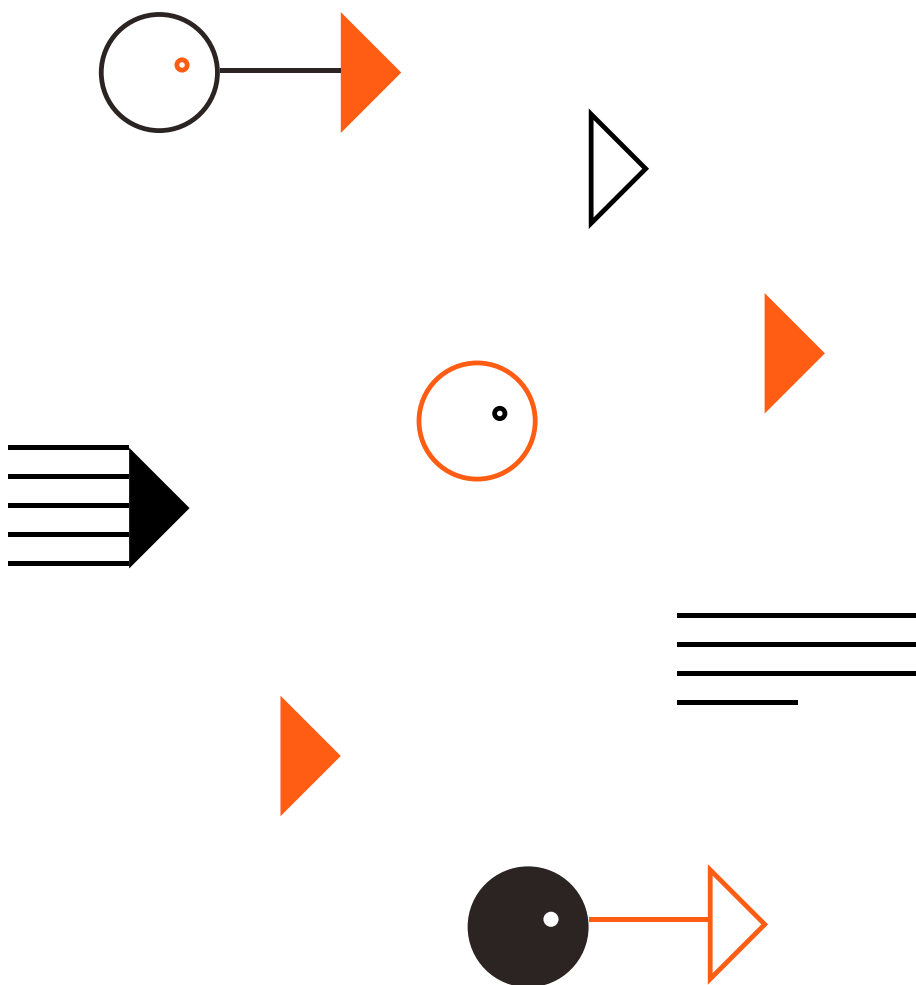
The various alternative presents we have presented here can be understood as new weak signals. On the different drifts taken by professionals and students while developing these alternatives, they gain knowledge and bring about new inputs into the design process. Choonhavan, who already came into the master's program with a clear idea, put it to the test in four different contexts. The design interventions expanded his initial inquiry on how to inform the young generation of future jobs in the current uncertainty and constant change conditions. The different approaches he took sought other ways of knowing and allowed him to present his project to various profiles and make it work in different situations.

It is interesting to reflect on the multiple ways of drifting the students' projects took. Comparing the starting point on broad wicked topics with the final personal projects may seem disconnected, but we can find a tread when we analyse the process. This process gives richness to the outcomes.

For example, Rames's project began with his concern about society's polarisation and alienation, and environmental and social justice. The project developed into 'aqui', a design collective that works on interventions in the public space. The work of 'aqui', though, comes from his initial concerns and is informed by his explorations in pedagogy, transformative design, and urbanism and mobility. His project is way more prosperous and has been nourished by his futures scouting process.

The methodology and examples shown exemplify how forecasting by design can be embedded in educational programs. Futures scouting can aid designers anticipate future challenges to start working on these issues in the present. Design by making allows for more personal involvement, and thus produces more informed and meaningful responses.

We have seen different approaches to futures scouting, and it is in this multiplicity and intersectionality of pedagogies and ways of knowing, where we find most value when presenting alternatives to present continuities.



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PART II.
ELABORATING

SHAPING



I04:
FUTURES
DESIGN 
TOOLKIT



BY Ammer Harb & Manuela Celi





Orientation

The FUEL4DESIGN project and wider community are working towards the definition of 'Design Futures' as domain, but most of all our concern is with developing as a perspective to shift the focus and practices, conceptually and performatively, of designing for different, future-oriented life worlds. This is a perspective that replaces the given limited extractive consumption-based economies with ones that are ecologically and sustainably resilient, creatively charged and imaginatively crafted (Morrison, et al., 2020).

Being aware that there is a crucial role for Design as 'a future broker', we see an urgent need to develop 21st-century design anticipation pedagogies reframed as what we call 'Design Futures Literacies'. In the social sciences and humanities, attention has been given to futures literacies (e.g., Miller, 2007; Poli, 2010, 2014; Rosen, 1985/2012), but the design community is only starting to explore its anticipatory potential and, then often rather superficially. We see a need to extend Design's focus from design thinking to an anticipatory design view (Zamenopoulos & Alexiou, 2007). Here anticipation may be defined as 'taking care ahead of time' (Morrison, 2019) in addition to creating 'new perspectives of how individuals, groups, institutions, systems and cultures use ideas of the future to act in the present.' ([Link ↗](#)); [[→ SEE Essay 1: Anticipatory Design Literacies](#) and [Essay 5: Care, Engagement & Design Futures Knowing, Volume 2](#)].

FUEL4DESIGN aims at creating a hinge between the academic contents coming from future studies and other transdisciplinary areas, such as philosophy, sociology, and ethics. Regarding this matter, design pedagogies and design practices can be then connected to the futures to form a transdisciplinary area of study that can be called Futures Design. In this view, theoretical information from a Futures Studies grounding will nurture research through Design and innovation to generate new processes and tools.

The FUEL4DESIGN project is interested in leveraging futures literacy for design students and young designers. It builds on both capacities of Futures Studies (Dator, 2019; Inayatullah, 2013; Voros, 2001) and Design as actions that are naturally-oriented toward futures (Evans & Sommerville, 2007; Herbert, 1996; Lindley et al., 2014). The design scholar and critic Susan Yelavich (2014) has epitomised this as 'Design is always future-making'.

This area of overlap between Design and futures has traces back in the 1960s and 1970s.

An example of this is the work of Robert Jungk and Norbert Müllert who tried to merge the creative with anticipatory approaches (Ollenburg, 2019). Yet, such collaboration, as we know today, has grown rapidly in the past decade (Bhatti, et al., 2014; Bleecker, 2009; Candy, 2010; Dunne & Raby, 2013, Candy and Dunagan, 2017). Candy describes this relationship as a 'love affair' (Candy, 2009). From Futures Studies, Designers are borrowing the perspective capacity and the relevant tools, while Futures Studies appropriate Design's capacity and ability of making and materialising concepts. In this way, Design, and its unique aptitude to visually grasp weak signals, and to project and embed futures, can address our current local and global settings, conditions, complexities and cultural diversity.

The environmental, social, and technological challenges we are likely to face in the future call for prompt actions towards facing them (Easterling, 2021; Fry & Nocek, 2021). These challenges need readiness and resources, practices, and critiques to prepare young design students as future designers and educators to engage productively in encountering them. The actual attempt to develop curricula material from Future Studies engaging with futures in design education is held back first by the difficulty of translating philosophical concepts and approaches into open tools for comparison and convergence. Then there is a tendency in design education to reduce the production of visions to a merely speculative approach. Considering that futures literacy is a necessary addition for designers, the ability to envision the future, and to make interpretations about social, cultural, economic and technological factors affecting futures, is fundamental for the 'what ifs' and the 'as ifs' that Design activates to be successful (Blaich & Blaich, 1993; Marseille & Roos, 2005; Verganti, 2009; Evans, 2010). What we present in this intellectual output responds to this need. The *Futures Design*



◀ **Figure 1**
A mock-up of the complete Futures Design Toolkit booklet (By the authors).

Toolkit [Figure 1] plays a role in linking, connecting and bridging pathways between the two areas of Design and Futures Studies. It introduces an approach that merges some of the tools used by futurists with select methods used by designers. It capitalises on the relationship of these two poly-disciplinary domains complementing each other; each field borrows from the other that which could support gaps and support the development of futures literacies for designers. In the upcoming sections, we offer framings and explanations of how that systematic study of futures can inform design processes through the tools and methods that support researching into futures. We borrow some of these tools along with ones developed in the design field to develop our FUTURES DESIGN TOOLKIT. We present ways we have turned and packaged knowledge and methods coming from Futures Studies into usable designerly content by educators and students. In the *Futures Design Toolkit* we aim to facilitate this bridge pedagogically to stress the methodological overlap between the two areas of study, design and futures.

Shaping the Futures Design Toolkit

Conceptual frameworks

To better understand the *Futures Design Toolkit*, it feels sensible to make a brief review of the collective conceptual frameworks it was inspired by and the profound motivations and agency it was driven by. First of all, the complexity of overlap between Futures Studies and Design Studies was challenging for us on several layers. These were:

- a) Exploring Futures Studies frameworks in relation to an anticipatory design literacy context*
- b) Matching anticipatory approach (indefinite and philosophical) with design research and practice (more tangible); and*
- c) Creating through tools a hinge between theory and practice.*

Next, we go through these three challenges and link them to research literature and related tools.

Exploring

The initial exploration of different futures frameworks was necessary not only to set a methodological approach. It also functioned as a way of conducting our research. The collection of several mental and conceptual frameworks to deal with futures was the basic research we conducted to steer the tools' gathering, selection and further development and framing.

Futures Studies might suffer some criticism in how it addresses the study of something that is not here yet (Dator, 2019; Bell, 1996). Many influential scholars would agree that Futures Studies is a semi-structured research activity that aims at identifying potential futures, it is located in the present and the future itself is not the subject of research as it doesn't exist. However, the concept of researching into futures is not about predicting what will happen (Inayatullah, 2013). It's about mapping alternative paths of what might happen and to prepare for the unexpected events in the futures thus to mitigate the

risk and to find opportunities (Masini, 1993; Marzano, 1998; Bell, 1996; Myerson, 2004; Jonas, 2001; Raymond, 2004; Evans & Sommerville 2007; Dator, 2019).

Inayatullah (2013) argues that to understand Futures Studies and the concept of research into futures we need a robust conceptual framework. Already in the 1970s Draper Kauffman, in a first attempt to define a set of practices for *Teaching the Future* (1976), spent an entire chapter on the need for mental models to help us think. A conceptual framework or model works as the basis of the futures process and thus tools and methods are situated within this process.

Futures Studies, considered a systematic and semi-structured social inquiry study of the future, helps in exposing how the actions we take today might change the future (Morgan, 2003; Fahey & Randall, 1998). In order to perform this systematic study, located in the present, the methodology of futures research should explore, create and test both possible and desirable futures to improve today's decisions. It should analyse the conditions and consequences that might change as a result of today's actions and policies (Glenn, 2003).

Despite the fact that Futures Studies has long suffered from the lack of conceptual frameworks, in the last decade a number of frameworks have evolved: two influential models are the Six Pillars by Inayatullah (2013) and Voros' Generic Foresight framework (2005). The Six Pillars introduced by Inayatullah (2013) are sequential ones that can be used in workshops as linear stages or as a theory for Futures Studies. In his Six Pillars framework, based on Dator's work (1979), Inayatullah links each pillar with particular methods that can be used during each phase/pillar. The six pillars are:

1) Mapping and the main method is shared history; 2) Anticipation and the main method is the emergent issues analysis.; 3) Timing; 4) Deepening the future, associated with the Causal Layered Analysis as the main method; 5) Creating alternatives, associated with building scenarios; and, 6) Transforming, associated with the implementation of the studies' output.

The Generic Foresight Framework introduced by Voros (2005) consists of six phases:

1) Inputs; to look and observe what is there? and what is happening?; 2) Analysis: what looks to be happening?; 3) Interpretation: what is happening?; 4) Prospection: What might happen?; 5) Outputs of what we need to do; and, 6) Strategy concerns as to how we will do what is indicated in the outputs phase.

While futures models and foresight frameworks are numerous, other models for foresight have also been reviewed (e.g. Martin, 1995; Reger 2001; Horton 1999; Popper, 2008). What is common and agreed upon in almost all of the reviewed futures research activities is that they all share three main phases: 1) scanning for future intelligence, 2) creating alternatives, and 3) developing an outcome which can be a scenario, strategy or narrative about futures.

Matching

Recent attempts to merge design and futures were in particular important and interesting for us. In this we refer to two key models that combine both futures research approaches with design as process. The first is the experiential futures work by Stuart Candy (Candy & Kornet, 2017), and the second concerns design futures process by Stephanie Ollenburg (Ollenburg, 2019).

The experiential futures model is divided into four phases: map, multiply, mediate, mount and return to map again (Candy & Kornet, 2017). In the 'map' phase, Candy refers to Fred Polak's images of the future (1979); this is an inquiry into and recording of people's images about their futures (what is probable, what is preferred and what is not preferred, or a combination).

In the second phase 'multiply', the researcher generates scenarios based on the gathering of the images of futures from the people to challenge or expand the recorded insights. The third phase is 'mediate': in this stage design takes place and the researcher builds tangible experiences, provo-types or immersive interactions. The fourth stage is the 'mount' where staging experiential scenarios happens and this creates a space to encounter tangible experiences. The fifth phase, a 'map again' activity is enlisted to investigate and record responses from people.

In her Design Futures Process model Ollenburg (2019) builds on participatory futures and Research through Design as an approach to develop a model for Futures Design. This forms synergy between the generic design process and participatory futures research. The model consists of an iterative cycle of three main phases: Analysis, Projection and Synthesis. Analysis is a question about what can be and what is possible. It is concerned with the in-depth examination of the subject matter. In the second phase, Projections, the question addressed is what should be or should not be there. This can be in a participatory workshop format that includes different stakeholders. The third phase, Synthesis, covers what could be and what comprises plausible futures events. This builds on the ideas developed in the Projection phase. The concept is to let stakeholders experience the tangible outcome of the futures design process.

Creating

In structuring the *Toolkit* we built on the insights gathered collectively from all the reviewed models. Importantly, the Toolkit itself is not a sequential process. It's a collective of tools and methods that can be used by educators or young designers to freely position themselves in their courses and/or design processes.

An influential model we've seen that is quite relevant and possible to capitalise on in working with design futures literacies and tools, is the Voros Generic Foresight Model. It includes the following components: Inputs, Analysis, Interpretation, Prospection, Outputs and Strategy/policy). This model can be considered a holistic one since it gathers the most agreed upon models' phases for the generic process of researching into futures. We selected this model for the following reasons.

First, its stages, or phases of foresight, are quite clear and direct, the description is sound and understandable. Second, the stages and the questions in each stage allowed for flexibility in terms of a breakdown, or matching with designerly activities or design process. Third, the overlapping with design as process is possible, and this is the most important trait. It's quite relevant to the generic design process introduced by Jonas (2007) which is the macro 3 design phases: Analysis, Projection and Synthesis that is combined with Kolb's learning cycle of Observation (research), Reflection (analysis), Decision-making (synthesis) and Action (realisation); (see: Jonas, 2007, Hugentobler et al., 2004; Ollenburg, 2019). Fourth, this was not intended to be a deterministic or a prescriptive process for design futures. Our approach in the Futures Design Toolkit is to open out for and provide a space for educators and young designers to design and tailor their processes and approaches to researching and designing futures.

The Futures Design Toolkit

Tools v toolkits

On reviewing design literature, the words 'Tool', 'Method' and 'Toolkit' are very common; they are also popular terms and sometimes used interchangeably which might create some confusion for the reader (Love, 2000; Herriott & Akoglu, 2020). It is important to introduce these terms and to identify what we mean by each before heading into the details of the structure of our *Toolkit*.

In an interesting paper, Dalsgaard (2017) identifies the role of tools in design practice as means to create future products and make sense of the design situation and problem under investigation. Dalsgaard defines tools as instruments of inquiry yet the confusion with the word 'tool' comes from a tool being used as an object and as a concept at the same time (Love, 2000). This is evident in its usage as an object or artifact in some design literature.

Herriott and Akoglu (2020), in a survey for the usage of the word 'tool' and the word 'method', identify that in design literature both are used interchangeably and are both described as ways of doing things. The debate around what is defined as a tool and what is defined as method is still unclear within the design literature.

However, from our survey of design literature what is commonly called a method and what is commonly called a tool are described with the same characteristics that Dalsgaard identified about tools. These are: '1) support perception, 2) support conception 3) externalisation (meaning representation) 4) knowing-through-action and 5) mediation between actors and artefacts (Herriot & Akoglu, 2020: 170).

The term 'toolkit' is itself a concept that is quite common in design practice. Very popular examples are IDEO Method Cards (2009) and Social Design Methods Menu (Kimbell & Julier, 2012). Lockton (2012) defines a toolkit as a collection of 'ways to do things' that can be applied to different situations. These toolkits include templates, canvases, guidelines and activities.

In the *Futures Design Toolkit*, we define tools as ways of doing and ways of knowing they are not objects but canvases, activities, and guidelines. Ours is a collection of tools that support educators to plan and conduct activities, and for design students to perform futures research exercises autonomously.

What is the Futures Design Toolkit, and why do we need it?

The *Futures Design Toolkit* collects a set of anticipatory design tools and methods suitable for different future unfolding approaches (e.g. develop alternative future paths, prepare for unexpected or generate novelty) as teaching and learning resources. The content of the Toolkit content includes tools and methods from future studies that have been partially adapted for the design practice, some newly developed tools, and the gathering of related future instruments from beyond Design where appropriate.

Our Toolkit is a collection of methods, tools, and tactics that can be used specifically during the process of Futures Design. These tools and methods might be used as facilitative agents in futures design education and research processes. They are offered and applied to support educators and students with activities that underpin them in defining a focal issue, to frame future trends or generate scenarios [[→ SEE Essay 7 & 8](#)]. Since many researchers and practitioners have proposed numerous ways of tackling design challenges in a toolkit format, the concept of an indicative *futures* design toolkit or methods collection is very relevant to the design practice. The idea behind the Toolkit is by extension to create a repository of various ways of performing particular design activities. These ways vary greatly depending on the context of available resources, institutions and time constraints. The tools, methods, and devices in this toolkit are accordingly represented in different forms:

- 1. A template or canvas that designers can use to identify specific aspects of their design inquiry*
- 2. A diagramming device that helps users of the Toolkit to breakdown or analyse an issue or topic, and*
- 3. A tool that helps users of the Toolkit to build and generate ideas and concepts.*

The *Futures Design Toolkit* also includes suggested activities, examples, and some principles that can be followed. The Toolkit acts to support procedural activities where steps can be followed to achieve particular results. In summary, the *Futures Design Toolkit* plays a role in creating a pool of ways and suggestions for performing activities in the context of designing future educational practice and research. On the one hand, the *Toolkit* facilitates the development of Design Futures Literacy for design students through practising and making. On the other hand, it supports design educators with usable material to facilitate the teaching process of designing future courses.

Although in our design and research process we identified many tools and methods for general Design and Futures Studies, Design Futures methods and tools are not very well established on both the pedagogical and practice-based levels. In our design futures education, there is an urgent need to nurture the Futures Design process with tools

and methods to support educators in structuring their courses, whether theoretical or studio-based design ones. These tools should form learning and knowledge outcomes that build: 1) the know-how to tinker with futures and their main open possibilities; 2) know how on how to choose tools depending on context and different objectives, and 3) help design students and educators to able to use but also adapt the Toolkit to use it in future professional work and study.

In order to go further into the *Futures Design Toolkit*, in the next section we present a toolkit development process through a survey of approaches and conceptualisations in design inquiry into tools and toolkits. We do this because this matters for investigating possible constituents of our *Toolkit*. It allows us to also work further with what we have made and to reflect more widely using concepts and terms with which to work further with Design futures literacies and the roles tools may play. It allows us to also reconsider the construction and uses of our own Toolkit and to develop related design futures literacies core tools and a methodologies vocabulary for futures design.

The Futures Design Toolkit development process

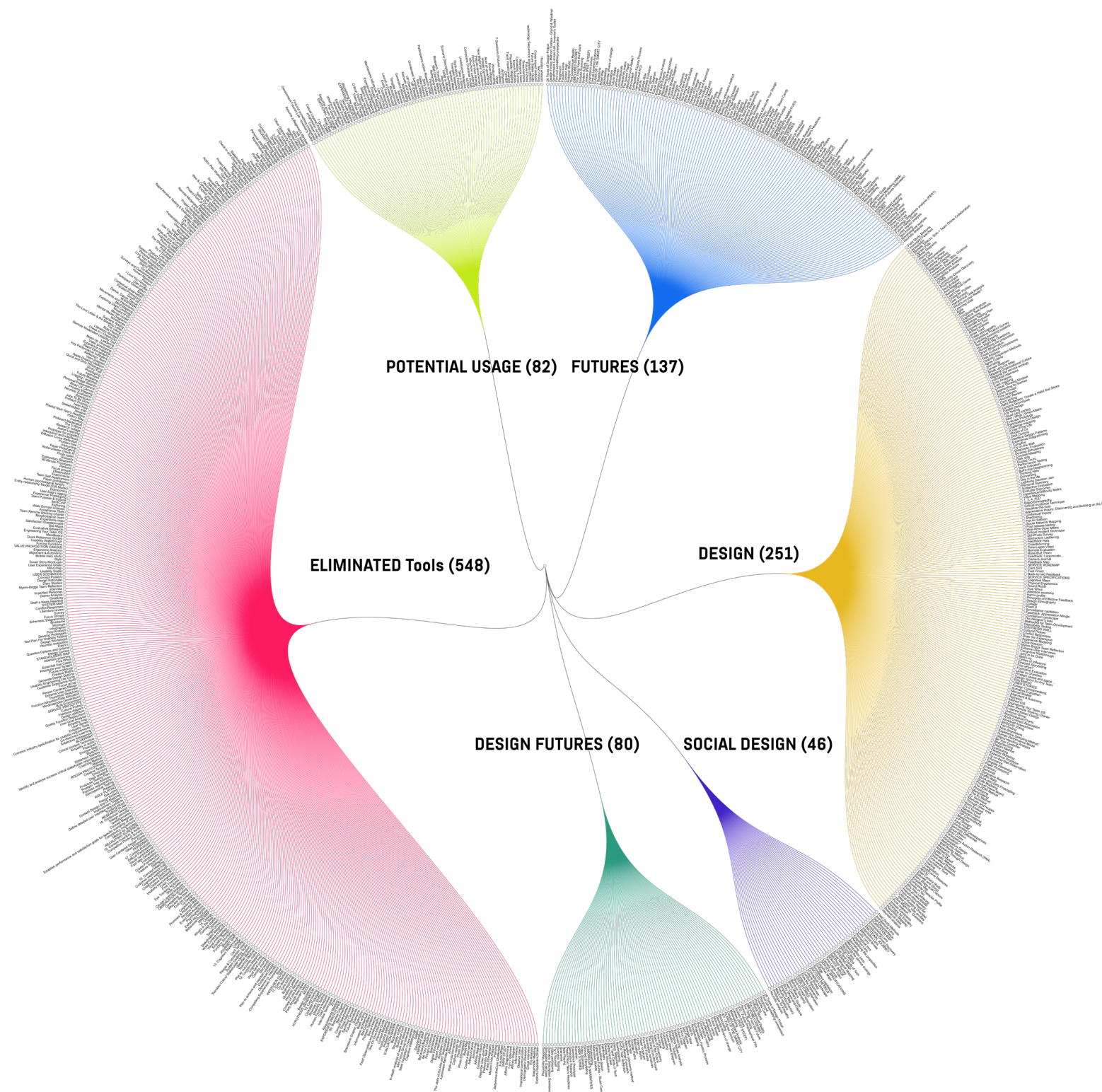
Phases

As discussed in the previous section, the *Toolkit* is a collection of methods, tools, activities and guidelines. The process for our *Toolkit* originated through desk research and a repository by creating a contextual map to identify and classify current tools and methods based on their use domains. We conducted exploratory research on design toolkits and collections of established and publicly available methods in academia and design practice. We collated numerous tools and methods from different areas, including Design Studies and Futures Studies. This was nurtured by the FUEL4DESIGN project partners' methodologies from both Futures Studies and Design, such as the design interventions and the *Futures Philosophical Pills*.

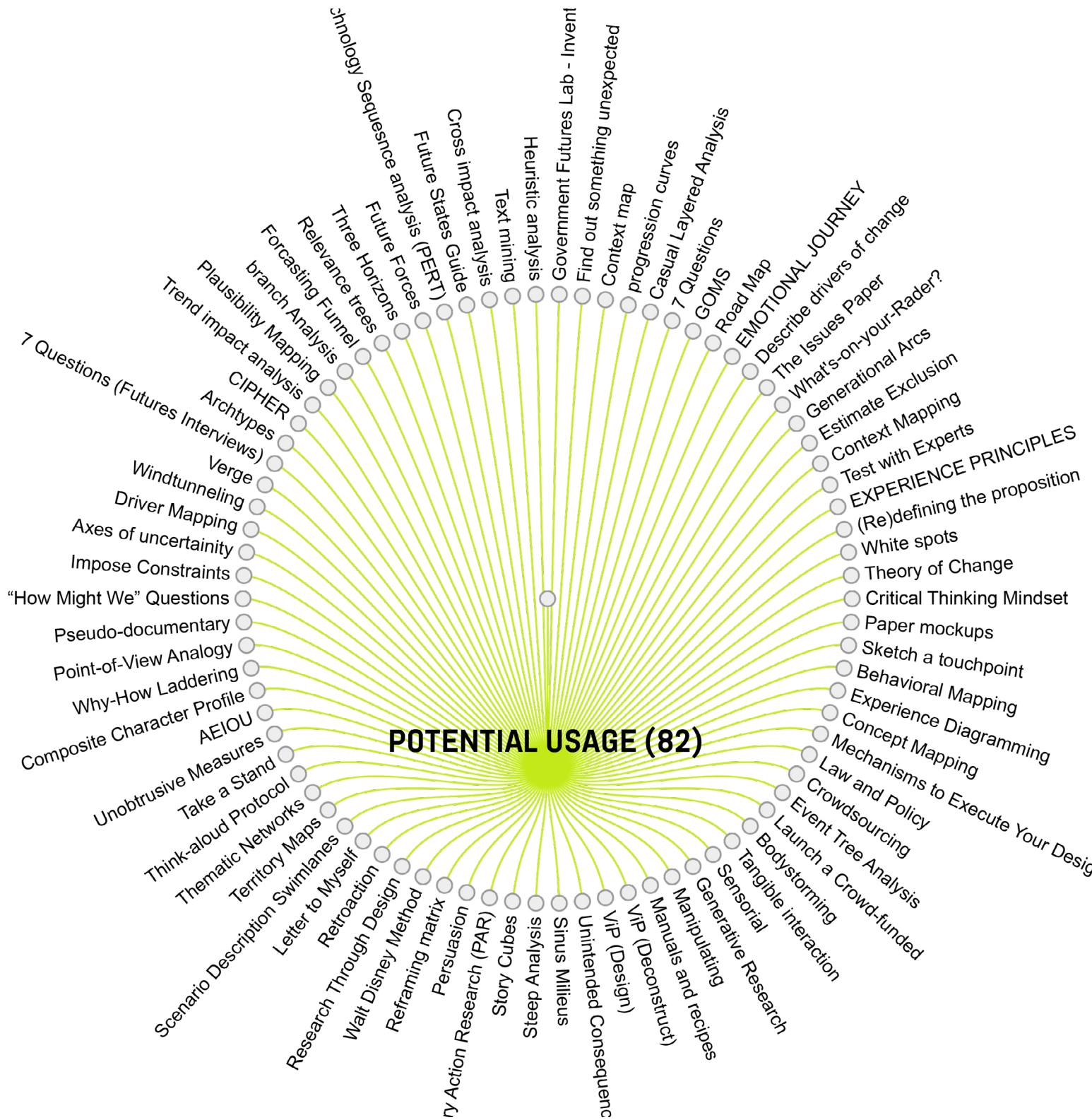
The study led to a vast array of tools and techniques (1062 collected in total) capable of representing the breadth of the sector [Figure 2]. A second layer of analysis mapped and connected the numerous application contexts, the different methodological approaches and the different cultural frameworks considering similarities or synergies.

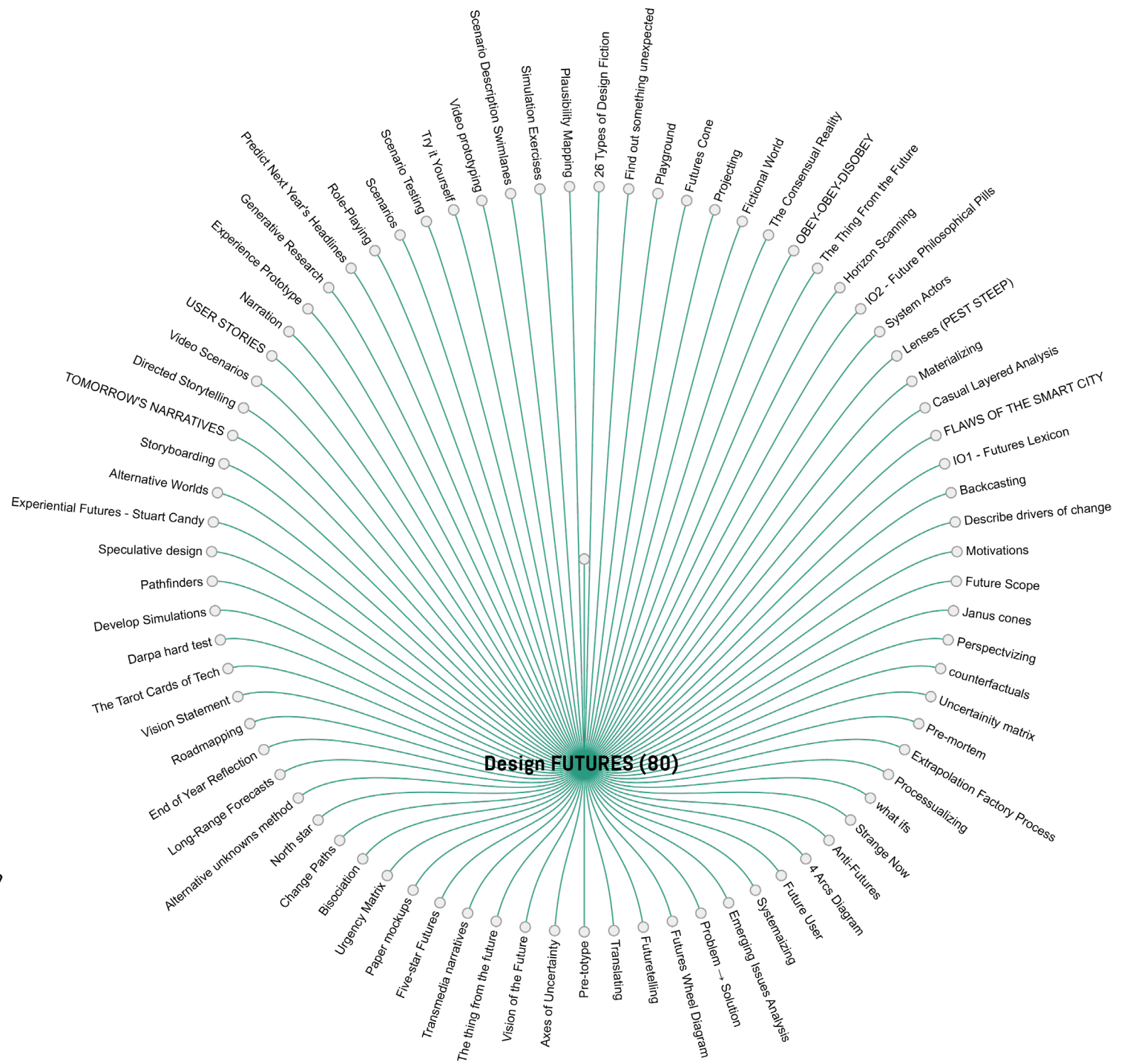
In the next phase, we focused on categorising all the tools by coding them by type, purpose and correspondent design phases, regardless of the toolkit or collection of methods to which they belong. Besides Futures and Design, we also selected potential tools from adjacent domains, which, due to their characteristics, seemed to show potential in the application for future-oriented projects [Figure 3].

This further step aimed to generate a functional space to create new tools or methods. After eliminating duplicate and ill-defined tools, the collected design tools arrived at, are 251 in total, including Futures Studies (137), design futures studies (80) [Figure 4], and other adjacent design domains (128).



▲ **Figure 2**
Initial segmentation
of all the gathered
tools. (By the
authors).





◀ ▲ **Figure 3 & 4**
 Tools/methods from
 futures, design
 and adjacent areas
 with potential to
 be adapted in the
 futures toolkit (By
 the authors).
 Design Futures tools.
 (By the authors).

We need to note a difficulty we encountered in this categorisation that has also been highlighted by Roberto Poli (2018). Poli identifies the drawback and weakness of the classification of tools in Futures studies which creates a challenge to identify what tools are originally futures-related and what tools are developed for other fields of study, such as sociology, policy and economics.

We also identified the same problem, yet the aim of our exploratory research was not to classify future-related tools but to be wide and open to see how tools and methods are collated in other toolkits or methods collection and to analyse them independently. That was the reason we collated methods coming from Design, Futures Studies and other adjacent areas, such as ethnography.

Selection, codification and segmentation

To widen the breadth of our search, we followed a systematic and exploratory approach in selecting, codifying, and segmenting tools. We followed these criteria in the selection: a) tools that are relevant to futures but are not used in design futures toolkits and b) tools that can be tweaked, developed, and adapted to be used in design futures.

Then, in an elimination round for the tools we followed these filtering criteria:

- 1) Duplicated tools; the same title and purpose but found in different toolkits or collections;*
- 2) Tools with very little information or description; and, finally*
- 3) Tools with ill-defined purpose of usage. After making the final selection and the round of elimination, we had to codify the ones we had.*

We coded each of the found tools according to two principles. First, was the declared purpose of usage by the toolkit/tool developers. Second, was to establish to what stage of the process a tool belongs. In order to conduct this codification, we had to sort the items based on a framework.

Process stages were central to the purpose of the *Toolkit*. The framework we followed to identify process stages was Voros' Generic Foresight model (Voros, 2005) with its five stages: Inputs, Analysis, Interpretation, Prospection, Outputs and Strategy Policy. We'll unpack later how this codification supported the development process of the Toolkit.

The final collection was then analysed, discussed and 15 tools were selected as the most relevant to the Toolkit structure. Five tools were then developed as original outcomes amongst possible others from the FUEL4DESIGN project which are the Philosophical Pills, Design Interventions, Scenarios Canvas, palmistry and Provo-types.

These selected and developed tools can also be considered as activities. All of the selected tools were adapted, refined and designed to be packaged in one toolkit which we called the Futures Design Toolkit [Figure 5]. Details on the structure and the elements of the Toolkit will be explained in the next section.

Overview of the Design Futures Toolkit

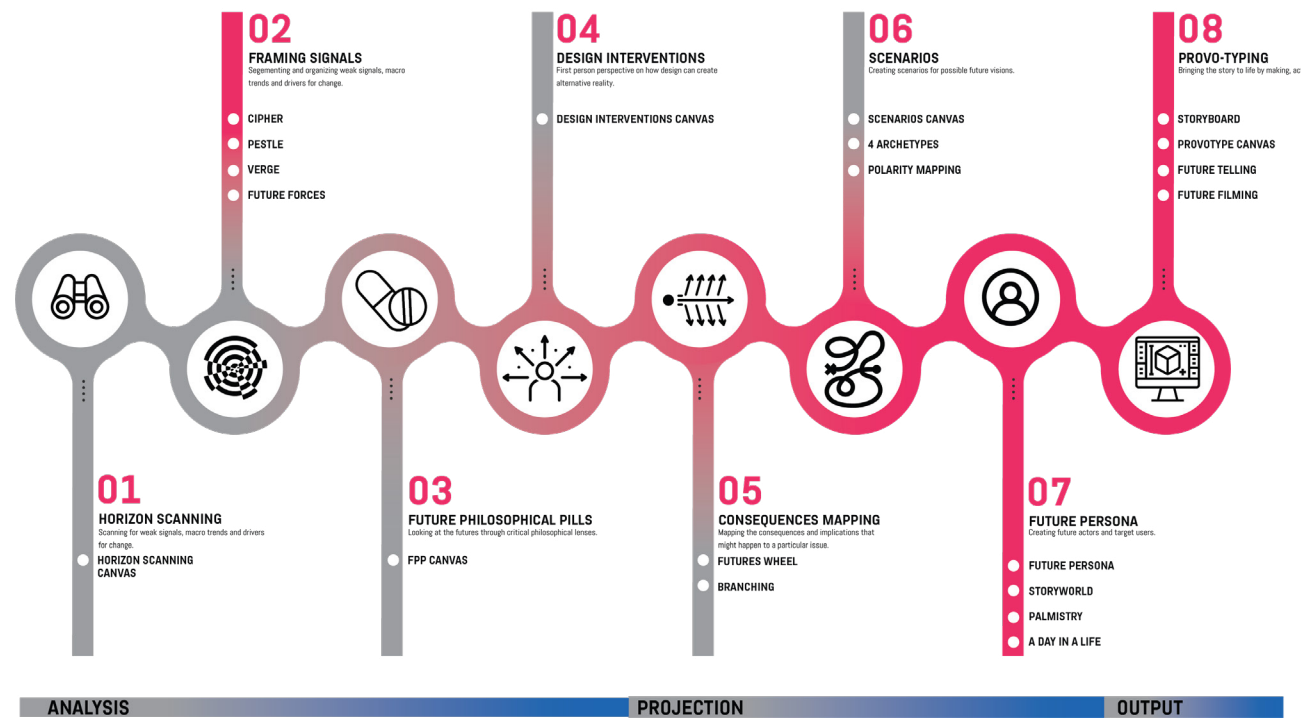
On details of the Toolkit items and uses

From the review we conducted in Futures Studies and design futures processes, we identified three main pillars for the designerly futures research:

Analysis: this is the pillar where the topic of investigation should be defined and the background research and analysis should be conducted. The question in this pillar is what is there, what can be found, what are the dynamics of the status quo? This phase is relevant to the inputs and analysis phases introduced by (Voros, 2005) as well as mapping and deepening the future by (Inayatuallah, 2013) as well as the Futures Philosophical Pills (FUEL4DESIGN, 2021).

Projection: This pillar is about the main foresight and envisioning activities. It includes mapping implications and consequences as well as creating alternative scenarios of the futures. The questions here are: What could be there? And what are the alternatives and what are the implications and consequences of today's actions?

Outputs: This is where Design takes place. And here comes the design activity as the outcome of a designerly futures research phase. How to enact change? What are the possibilities of action? Can we implement solutions? And how do we interrogate futures? Here, we relate to Candy & Dungan, 2017; Montgomery & Woebken, 2016; Ollenburg, 2019.



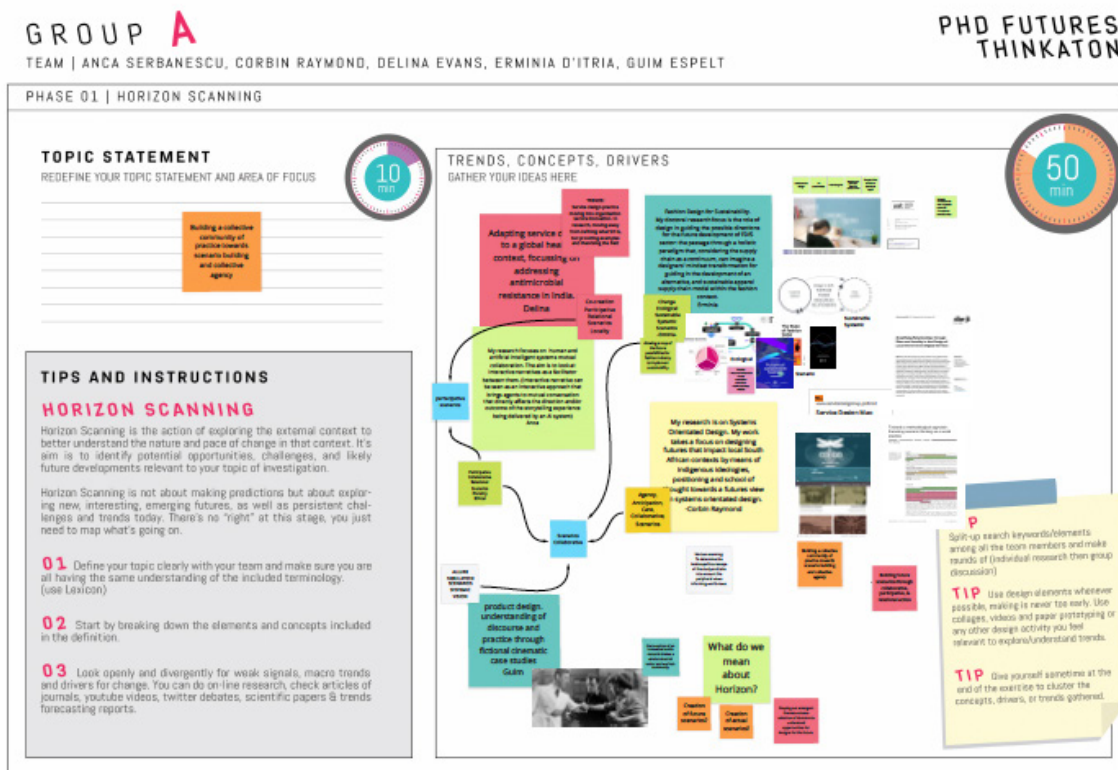
◀ **Figure 5**
Toolkit structure indicating each element/phase and the associated tools/methods to it as well as the relationship between the elements and the pillars of the Toolkit. (By the authors).

Analysis

01 Horizon Scanning

Horizon scanning is originally a foresight method that can be used by governments, policy-makers to support decision-making (Palomino, et al., 2012). Sutherland, et al. (2011) define horizon scanning as a systematic search for drivers, trends and opportunities that might influence the achievement of management aims and objectives. It is also relevant to the method of emerging issues analysis (Inayatullah, 2013).

Horizon Scanning is the action of exploring the external context to better understand the nature and pace of change in that context. Its aim is to identify potential opportunities, challenges, and likely future developments relevant to a topic of investigation that is issue-centred horizon scanning as identified by Kerr et al. (2006). Horizon Scanning is not about making predictions, it's about exploring new, interesting, emerging futures, as well as persistent challenges and trends today. There's no 'right' at this stage; what is needed is objective and systematic mapping of the factors. Horizon scanning can also be called blue-sky research. In this stage, weak signals, trends, and drivers for change should be gathered and identified [Figure 6].



◀ **Figure 6**
An example of the Horizon Scanning Canvas, Futures Design Toolkit in the PhD Futures Thinkathon 2021, participants to this workshop used the canvas instruction together information and intelligence about their projects as well as using it as an aiding tool to define their topic under investigation (FUEL4DESIGN, 2021).

Case

PhD Futures Thinkathon 2020. The aim of this intensive workshop was to introduce contributing institutions' PhD Design students to current development and research in futures literacies; connect them to research methods and content of futures literacies;

and train them to apply futures literacy methods and content in PhD research practice. In Horizon scanning, participants are asked to map trends, drivers for change, and weak signals in relation to the topic of the focal issue they are investigating. It's highly encouraged that participants use visual material to support their research at this phase.

02 Framing Signals

At this phase, the gathered intelligence about the futures can be interpreted, categorised, and organised. In a simple explanation, making sense of the gathered data according to particular categorisation and clustering techniques so that they can be utilised in the subsequent phases. This phase is related to the concept of deepening the futures (Inayatullah, 2013). In this phase the gathered signals futures should be seen from different perspectives and the signals, trends or drivers should be mapped in deeper lenses to make visible the meta layers of how and why these patterns are formed.

The lenses included in this phase are: PESTLE Analysis (Aguilar, 1967) is used to identify the Political, Economic, Social, Technological, Legal and Environmental factors affecting the issue under investigation.

CIPHER (FTI, 2020) is an acronym that describes six indicators for trends patterns understanding. Which are: Contradictions, Inflections, Practices, Hacks, Extremes and Rarities. The aim of using them is to uncover hidden patterns and to understand what a trend or a driver really means, and does it have any connection with other trends. Or does it indicate a radical change that might happen? Each of the categories is described in the template.

VERGE (Lum, 2014) is a systematic approach to explore drivers of change, concepts or trends through an ethnographic lens by taking a human-focused or cultural perspective. The aim is to get an experiential notion of how the future feels and tastes. It explores the social and human impact of drivers and scenarios through six human domains which are: Define, Relate, Connect, Consume, Create and Destroy.

In Futures Forces (FTI, 2020), the future does not evolve on its own, in a vacuum. Trends are subjected to and shaped by external forces. Just as it's useful to organise our thinking along a chronological path through time zones, In FUTURE FORCES, the sources of macro change represent external uncertainties and factors that broadly affect business, government and society. It lists 11 sources of macro change that are typically outside of a leader's control [Figure 7].

03 Future Philosophical Pills (FPP)

This focus is one of the outcomes of the FUEL4Design project. The *Future Philosophical Pills (FPP)* aims to interrupt existing or in-the-making design projects leading the process into a discursive practice. It supports the users of the Toolkit to think and innovate and critique ideas about the future.

PHASE 02 | FRAMING SIGNALS

TIPS AND INSTRUCTIONS

FUTURE FORCES

FUTURE FORCES* represents external uncertainties & factors that broadly affect, business, government and society. The inner layer of the circle represents 10 sources of macro change that are typically driving the futures. While the outer shell represents 10 aspects focusing on design factors.

01 Give yourself sometime to read and interpret the clusters made in the Horizon Scanning exercise.

02 Read the description in the template clearly and make sure you and your team members are standing on the same ground.

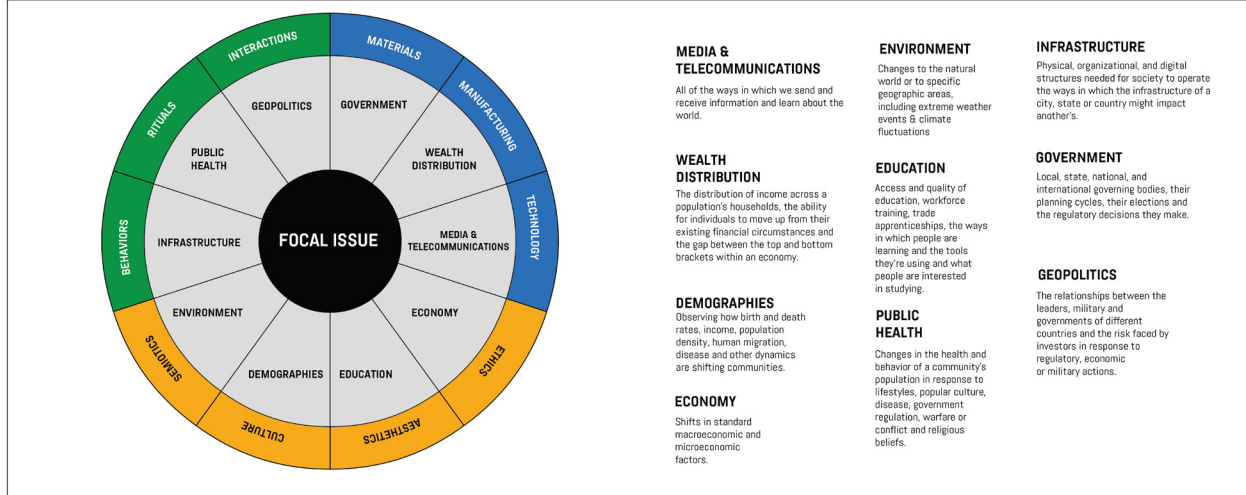
03 From the clusters you've created, segment the gathered trends, concepts, drivers in the FUTURE FORCES template

04 Focus on events and drivers that are impacting the future of the investigated topic in each category.

05 Give yourself sometime for discussion to share concepts and ideas with each other.

06 In each section, have another layer of order in terms of urgency, priority or relevance. This would make it easier to narrow down your focus in the next stages

◀ **Figure 7**
Future Forces
Canvas from the
Futures Design
Toolkit, FUEL4DESIGN).



(*)PESTLE is a deviation from the PEST Analysis created by Francis Aguilar (1967) in Scanning the Business Environment, Macmillan; 1st THUS edition



The *Future Philosophical Pills* use a transdisciplinary and transversal perspective to articulate 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 scaffolding tangible design-led interventions which in turn are able to feedback onto speculation. It's important

to stress that the speculative and the pragmatic are not opposed to each other: pragmatic does not 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 *Future 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: they are 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 to Design's many ways of seeing, interpreting and enacting the future.

Tools included in this stage: The Future Philosophical Pills decks of cards.

04 Design Interventions

The intervention stage refers to enacting change from a first-person perspective. It entails a tactic through which the designer or user of the toolkit can tackle futures by making and enacting actual change by creating alternative presents. It does acknowledge design action as the main driver and method which engages the practitioner in materialising futures.

Design interventions aim to situate signals in an immersive approach to futures scouting. Here making and enacting are the centre of the process. Designers can identify and relate to trends, weak signals, and drivers of change by positioning themselves closer to the researched issues or topics. This positioning helps make sense of the context designers are working in. It enables them to gain different perspectives on the issues or topics of interest. Further, it allows for a better understanding of the surroundings, resources, stakeholders and materials that can become related or help in a future-oriented design project.

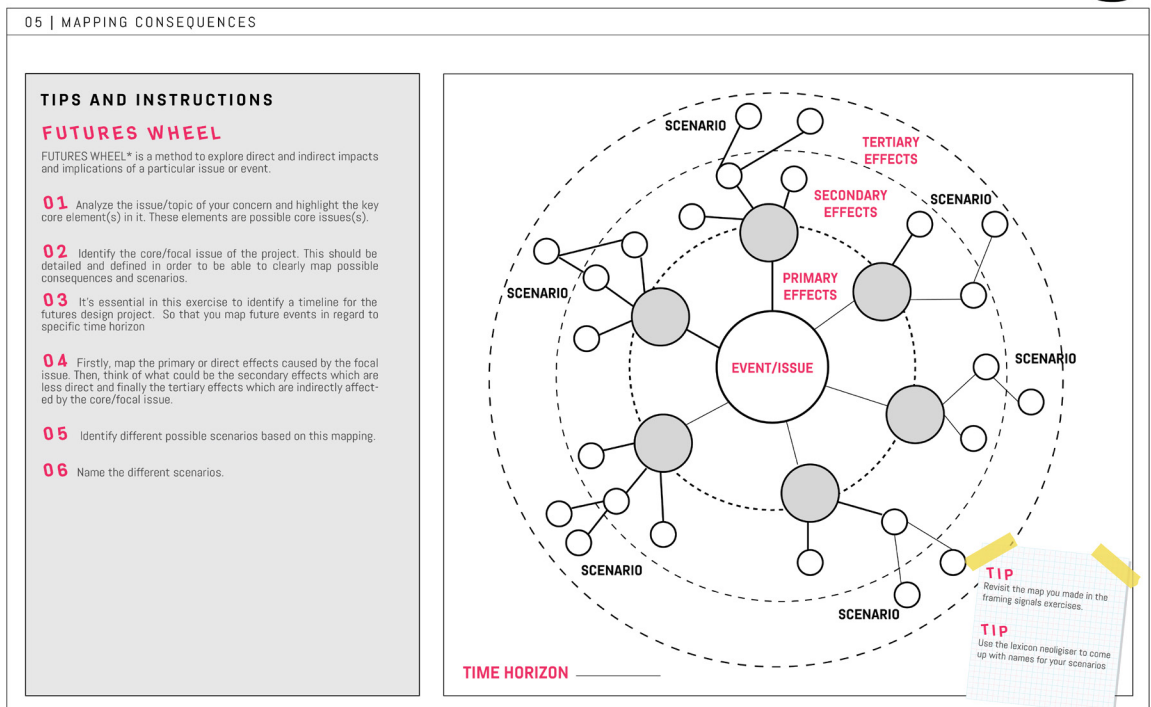
Projection

05 Consequences Mapping

The aim of this stage is to map the implications and consequences of a particular issue under investigation. The focal issue that is the core idea behind the topic under investigation should be mapped over a timeline to extrapolate the different possibilities or effects that might happen (either direct or indirect). The aim of mapping consequences is to develop potential alternative future paths. Those paths should



Figure 8 ►
Futures wheel
canvas from
the Futures
Design Toolkit.
(FUEI4DESIGN,
2021).



(*) FUTURES WHEEL Developed originally by Glenn, J. C. (1972) in Futurizing teaching vs. futures courses. Social Science Record 9
Further reading can be found in Futures Research Methodology—Version 3.0 - The Millennium Project





◀ **Figure 9**
An example
for Mapping
Consequences by
Provo-typing. 'PISSING
PANTS: From waste to
taste' by students
of the 'PoliMi
Futures Fictions'
Course 2022,
Politecnico di Milano:
Zachary Edwards,
Jisoo Kim, Lars
Lampani, Alberto
Milano, Alexandra
Spassov, Davide
Stefani and Chaoyi
Zhang. (FUEL4DESIGN)

be turned into alternative scenarios. Mapping consequences and implication is a very important component to enact actions. This is evident in the implications of the actions we take today, as seen in the Futures Wheel. [Figure 8]. Dunne and Raby (2013) discuss this aspect in their book *Speculative Everything*; they highlight that designers should not only design an application but also its design implications. The reason for designing implications is to reflexively highlight the flaws in the practice and the consequences of the actions we do today.

Case

PoliMi Futures Fictions 2022 is part of the concept design studio for master's students of integrated product design at Politecnico di Milano. The aim of the concept design studio is to stimulate the students for the definition of a product/service concept and scenario, and valorise the experience and creative dimension.

In this case, students developed a scenario in 2108 in which the world is experiencing extreme food scarcity and water shortages because of climate change and food wars [Figure 9]. Real foods are an extreme luxury and synthetic food replacements are readily available. Water shortages have caused water to become a new currency. Furthermore, people now collect every 'liquid' that comes out of their bodies. This situation has led to a profound inequality, dividing the society into three distinct social classes. One of the products for the highest social class is the Pissing Pants are made of PVC to prevent leakage. They are a unisex product because of the unique shape of the shell. The tubes are attached to the shell and are input inside the pockets so that the urine will reach the soil directly. This particular model of pants has two big pockets on the front where the user can grow vegetables and fruits.

06 Scenarios

This is the stage where most of the gathered insights can be melted in one pot to formulate a solid and consistent scenario. The scenario is giving shape and coherent images to the envisioned world(s). This helps the user of the Toolkit to better situate the design project and to look at a particular future scenario from a deep and comprehensive perspective.

In FUEL4DESIGN, we developed a device to facilitate developing scenarios. This tool can be combined with visual metaphors along with the literal or verbal description of the scenario. It is divided into five sections as follows:

Immediacy: The scenario should be understood quickly, its meaning must be unique, non-misleading, and engaging. The images must be strongly evocative, vivid, must be both rapid and icastic (Calvino, 1988).

Sensoriality: Images and words that make up a story should be able to produce certain effects to provoke emotions, evoke sound or tactile through the combination of various elements: cutting, framing and juxtaposition of contents emphasise meaning.

Consistency: A scenario can often be hard to believe, sometimes for its very distant horizon,

sometimes due to the 'disruptive' effect that it wants to produce. If it is oriented towards a future dimension, it is not important that it is probable, but plausible.

Coherence: The scenario must always show its internal consistency. It is possible to decontextualize the use of a service from one place to another but at that point the whole narrative must comply with the new choice.

Provocation: The stories should fascinate the audience and persuade others to act in relation to the long-term goals, making people feel empathetic and then motivating them to adhere to the scenario. The scenario is much more effective when the narrative has the power to break stereotypes.

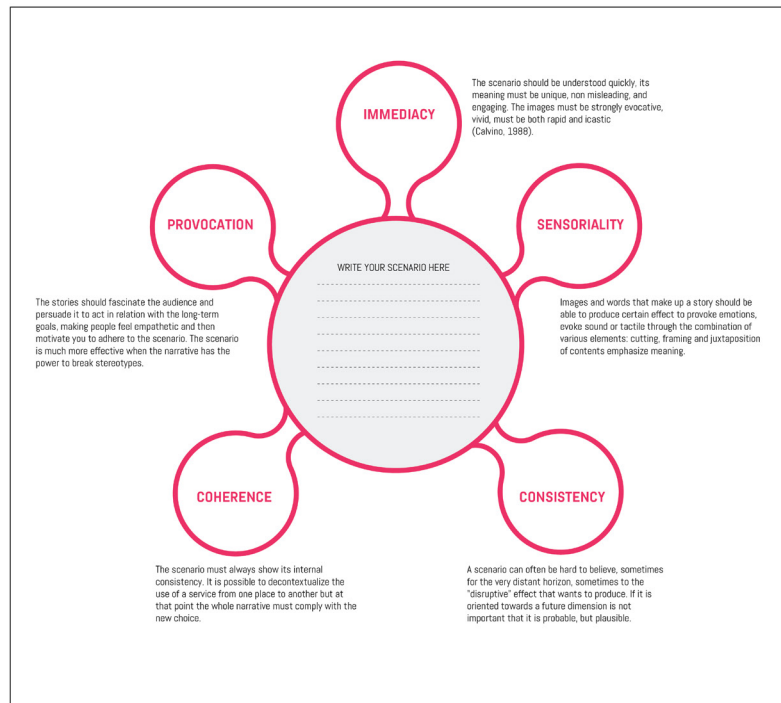
Tools included in this phase: Scenarios Canvas, Four Archetypes (Dator, 2002) and Polarity Mapping (Schwartz, 1991).

TIPS AND INSTRUCTIONS

SCENARIO

SCENARIO is a powerful tool to envision possible futures. In this stage you should select one of the scenarios developed in the previous phase then develop it into a comprehensive scenario.

- 01** Quickly analyze the main elements that emerged from the scenario you've developed
- 02** Read the categories carefully in the scenario making template. Discuss them with your team and then situate your ideas in each category.
- 03** Use visual aiding material including, images, videos and sketches to describe intangible meanings and directions.
- 04** Consider social, cultural and technological contexts of the world you're building.
- 05** Write your scenario in the middle of the template.



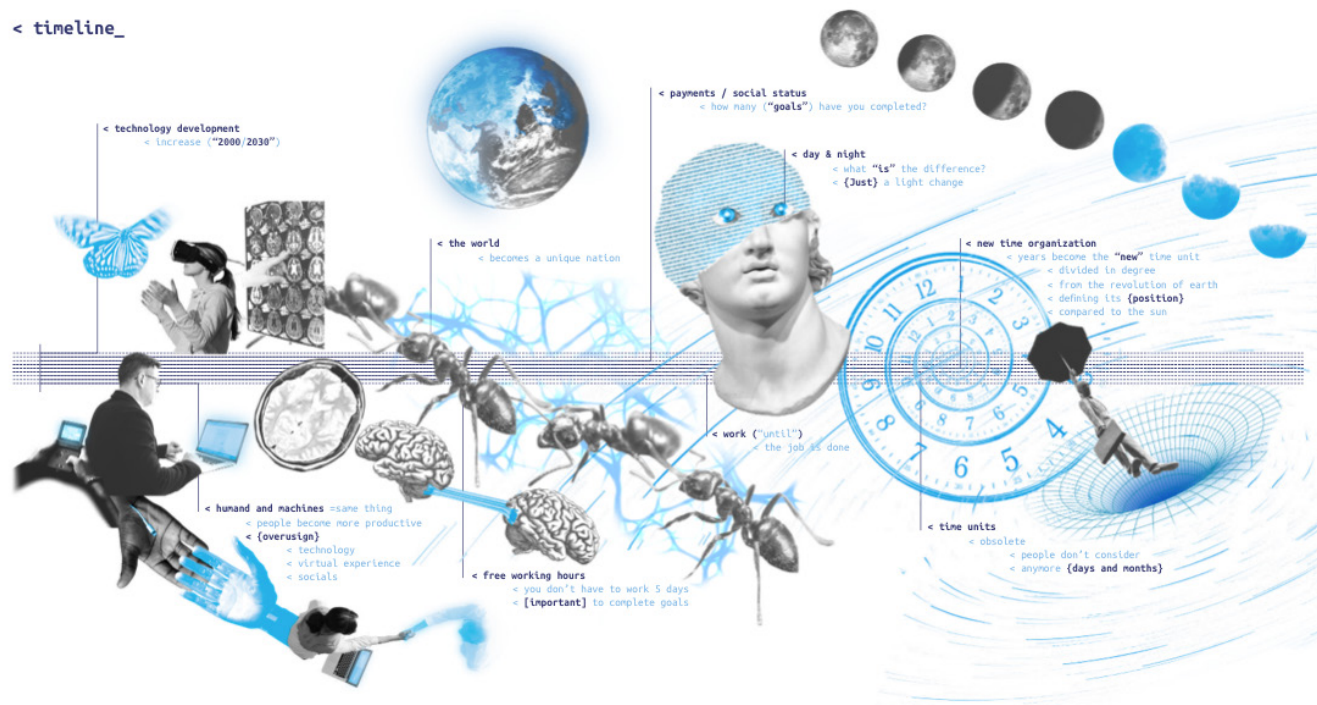
◀ **Figure 10**
Scenarios canvas
from the 'Futures
Design Toolkit'.
(FUEL4DESIGN, 2021).

Case

PoliMi Futures Fictions 2022 is part of the concept design studio for Master's students of integrated product design at Politecnico di Milano, the aim of the concept design studio is to stimulate the students for the definition of a product/service concept and scenario, valorise the experience and creative dimension.

In this case, students developed a critical provo-type about the perception of time and its connection with work policy and rules. In this scenario [Figure 10], universal entropy has reached a point where borders are blurring more than ever before, ushering people into the next phase of their evolution [Figure 11].

Figure 11 ►
Scenario Building
by creating
a timeline of
possible events.
'BOW' by students
of the 'Polimi
Futures Fictions'
Course 2022,
Politecnico di
Milano: Helen
Berhanu Tekle,
Filippo Bugni,
Matteo Corradini,
Sabrina Gadotti,
Elena Scarpelli
and Zixin Zheng.
(FUEL4DESIGN).



The inclusion of surrounding arms, neck, and back framework ensures that the workers are forced to adopt a more contracted and immobile posture, reducing body stimuli. This represents a prompt response to scientific results which have suggested that underestimations in interoceptive time perception are connected to different psychological conditions characterised by a diminished processing of high salience stimuli from the body. The Provo-type shows a device that forces the workers to be inclined on their desks while manipulating their senses so that their perception of time is altered.

07 Future Persona

The persona represents fictional actors of the future scenario. This is the stage where users of the toolkit can work on situating actors in the developed scenario. It supports them to imagine how these actors would look and how they would interact with the surrounding context.

This section explains how to position personas in design scenarios. Educators might introduce the features of personas and how to create them. It also explains how to develop solid connections between the fictional personas and the scenario under development.

From the eyes or perspective of a particular character (either human or non-human) this helps in seeing the scenario from a specific perspective(s). The actor in a scenario also helps in the creation of situations to be used in further applications of the design process (Provo-types or experiential futures for example). Personas are fictitious characters that represent the needs and requirements of larger groups of users in terms of their goals and personal characteristics (Cooper & Reimann 2003; Cooper 1999; Pruitt & Adlin 2006).

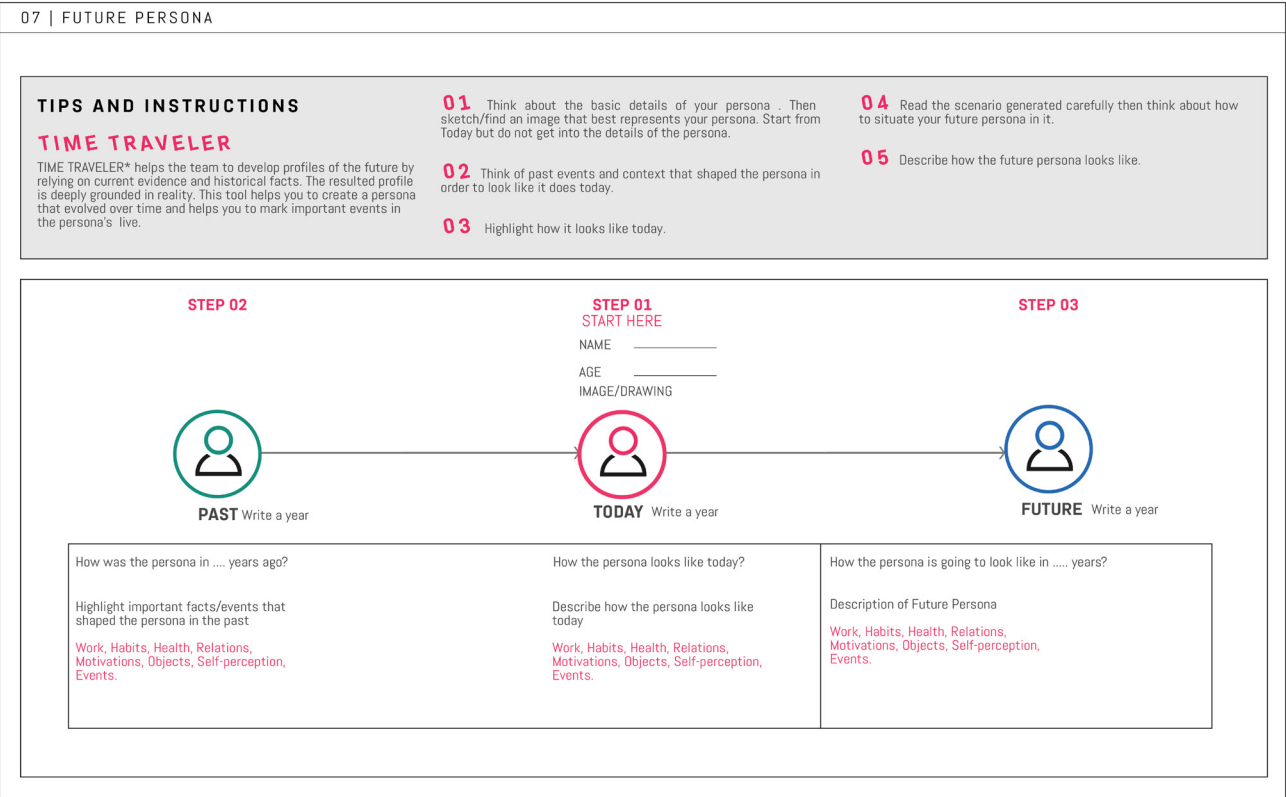
Tools included in this stage: A Day in a Life (Martin, & Hanington 2012), Futures Persona (Carleton et al., 2013), Story World (Kimbell & Julier, 2013) and Palmistry.

Case

PhD Futures Thinkathon 2020: The aim of this intensive workshop was to introduce contributing partner institutions’ PhD Design students to the current development and research in futures literacies; connect them to research methods and content of futures literacies; and train them in applying futures literacy methods and content in the PhD research practice [see also on time, Figure 12].



◀ **Figure 12**
Time Traveler Canvas. Futures Design Toolkit (FUEL4DESIGN, 2021).



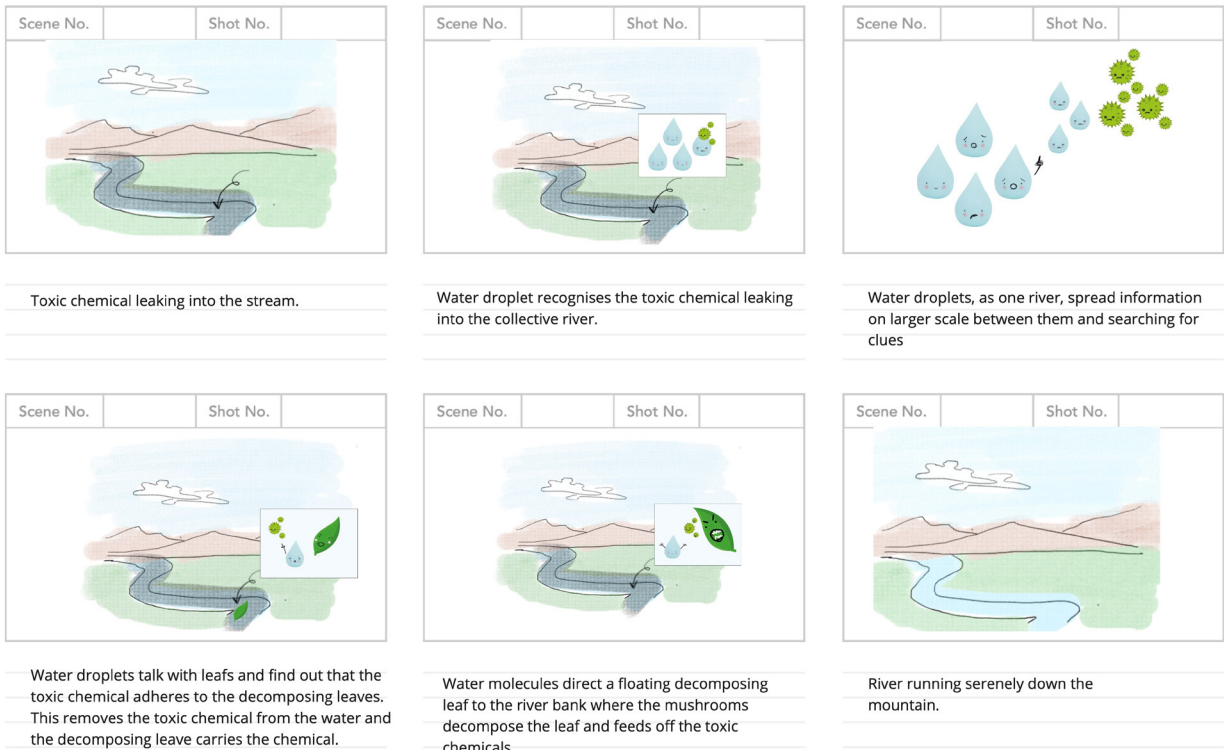
(*) TIME TRAVELER adapted from Future User in Playbook for Strategic Foresight and Innovation (2013) by Tamara Carleton, William Cockayne & Antti-Jussi Tahvanainen



In this case, workshop participants developed a future persona as a non-human actor which is a river [Figure 13]. The persona was meant to create a discursive space about future issues by looking at the issue from a different perspective from the human one.

Figure 13 ►
Future Persona
Canvas, Futures
Design Toolkit. In
the PhD Futures
Thinakton 2021,
participants to
this workshop
used the canvas
to build a
futures persona
that could be
situated in their
futures scenario.
(FUEI4DESIGN).

The Last Contaminated River



Looking at the issues of pollution and contamination through the eyes of the river.

Output

08 Provotyping

The last stage is Provo-typing. Provo-typing is a word that mixes between the word prototype and the word provoke. In other words, it means a provocative prototype. This stage is about the creation of discursive and provocative prototypes aimed at creating a discursive space around the focal issue under investigation.

Provocative prototypes or (provo-types) indicates a type of a design output that aims to open a discussion or a conversation around a particular issue of the future. It acts as a catalyst to provoke reflections from viewers. It amplifies the issue under discussion through physical or digital means. Theoretically, provo-type capitalises on activity theory that considers external and internal contradictions of activities. In this view, contradictions or tensions can be considered as dialectical processes of change that, in turn, develop new forms of activity. The aim is to expose an issue in order to find other ways of doing, making or enacting social change (Boer & Donovan, 2012).

Provo-typing can be 'tools for creating meaning' (Disalvo, 2012) and evoking discussion by creating discursive spaces. Tharp and Tharp (2019) define key views for creating a discursive artifact. Provo-types in futures practice can be considered as a kind of a

diegetic prototype. This is a term that came originally from cinema studies. David Kirby (2010) explained diegetic prototypes as unreal objects that depict scientific concepts in fictional worlds. (Celi & Formia, 2015) Bruce Sterling, the futurologist who coined the term design fiction defines it as 'the intentional use of diegetic prototypes to suspend disbelief in the future' (Sterling, 2005). From this premise, we can identify one role of provo-types to suspend the disbelief about futures, and to make use of a design object not only as terminal, but as medium.

Another role of provo-types is to go beyond the mental models of the future. This gives users the chance to touch, feel, and interact with possible futures. It turns futures from verbal to visceral (Candy & Dunagan, 2017). The ultimate goal of a provo-type is to encourage discussion, communicate ideas about certain issues of futures and to provoke reflection of the audience (Bardzell et al., 2012). It develops awareness, exposes implications and consequences. Feeling futures can work as a catalyst in this process and can turn out to be an agent of social change. A more recent formulation of experiential futures practice; 'the design of situations and stuff from the future to catalyse insight and change' (Candy & Duganan, 2017: 137).

Tools suggested in this phase: Storyboard, Provo-typing, Future Filming and Future-Telling.

Case

'PoliMi Futures Fictions' 2021 is part of the concept design studio for Master's students of integrated product design at Politecnico di Milano, the aim of the concept design studio is to stimulate the students for the definition of a product/service concept and scenario, valorise the experience and creative dimension.

In this case [Figure 14], students developed a critical scenario in which the society is divided into two opposite poles. The first one is based on the relationship between humans and nature. In this pole, the glove is a ritual object that emerged from a Northern Italian cult that formed in 2057 in response to the Big Sink: a global climate disaster that caused coastal regions worldwide, like Costa Rica and Southern Italy, to go underwater, completely engulfed by rising sea levels. The underlying purpose of the glove is defined by the main acts of the ritual.

After the dramatic consequences of human-made climate change lead to a drastic loss in biodiversity and overall devastation for plant and animal life, the counter-revolutionist nature movement aimed to regain a connection with the Earth's biosphere. The long self-made tools served as extensions of the fingers, allowing the ritualists to embody their intimate connection to the natural environment around them. Brush-like extensions are used for pollination rituals and raking tools enable the tilling of the soil.

How to read the Toolkit

Doing and knowing

The concept of the *Toolkit* is to be a supportive and facilitative collection of 'ways of

An example of Provotyping as physical object: 'RITUAL GLOVES' by students of the 'Polimi Futures Fictions' Course 2021, Politecnico di Milano: Annalise Kamegawa, Caterina Regni, Christine Lunglang, Elena Guaraldo, Giovanni Pastoressa, Joshua Seckerdieck, Julian De Freitas, Mei Du, Valentina Giulietti and Yanhang Jin.



doing' and 'ways of knowing'. The *Toolkit* targets educators and design students. For educators they can be used as design activities in the design studios or theoretical courses; they can support educators in providing students with guidelines for doing futures research activities such as scenarios building and futures framing. They do not substitute the theoretical content of the course but they can work as an agent and catalyst in learning through doing.

For instance, the *Toolkit* can help design students in deepening their understanding about the issue under investigation through team activities such mapping consequences and building timelines. This can be an engaging activity through which students actively learn how to scan the trends, drivers of change, patterns or emerging issues. In this case the *Toolkit* will play a navigating role in orienting and leading students through the usage of particular lenses. These lenses, in turn, would help them in segmenting and categorising the gathered insights. Here, the toolkit role is twofold: a guide and a space to gather and organise research and insights.

All the gathered tools are packaged in one booklet and available online, but they can also be downloaded separately. In the *Toolkit* document, there are several canvases or templates that include suggestions or instructions of use.

In each dedicated page for a tool or a method, there are a set of steps or guidelines to explain how to conduct the activity. There is also a subsection for the references and extra readings as well as the connection with other outputs of the project such as the *Design Futures Lexicon* or the *Futures Philosophical Pills*.

These written steps are not meant to be prescriptive or sequential, but rather guidelines for beginner users or users with limited knowledge about the field of design futures. It is encouraged that educators pick from these tools and canvases what they feel suitable to their context of use, educational background and what suits their students. The *Toolkit* needs to be considered as an open collection to select from based on the

▼ **Figure 15**
Annotated guide on 'How to read the Toolkit' showcasing the sections and explaining how the Toolkit can be read.

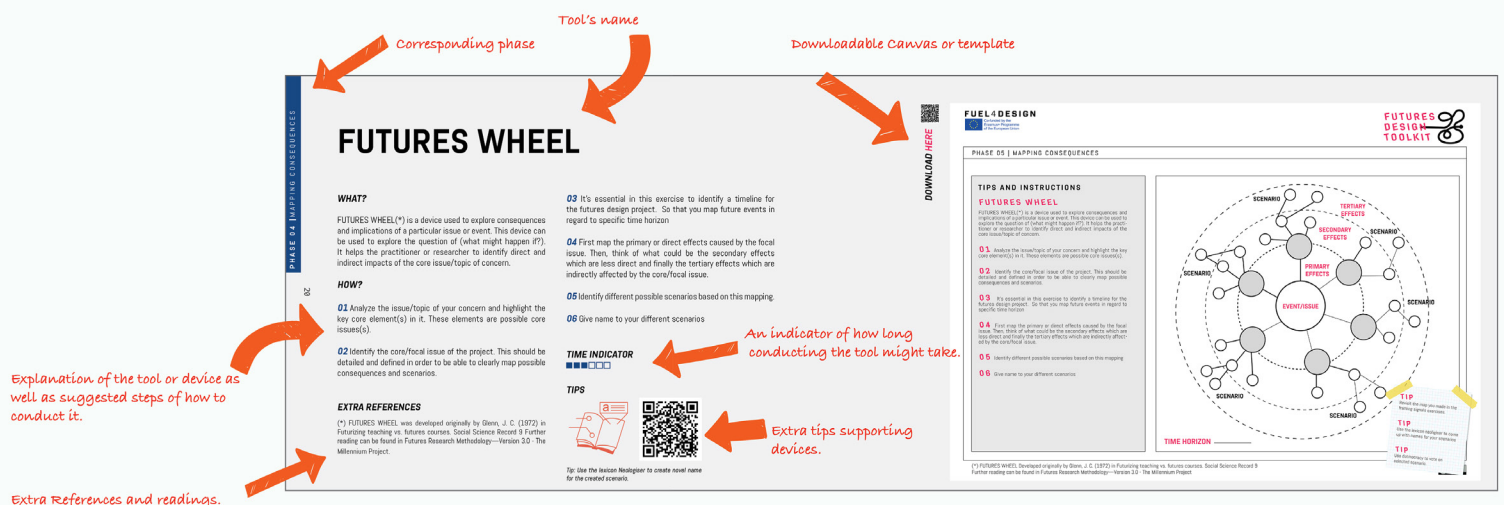
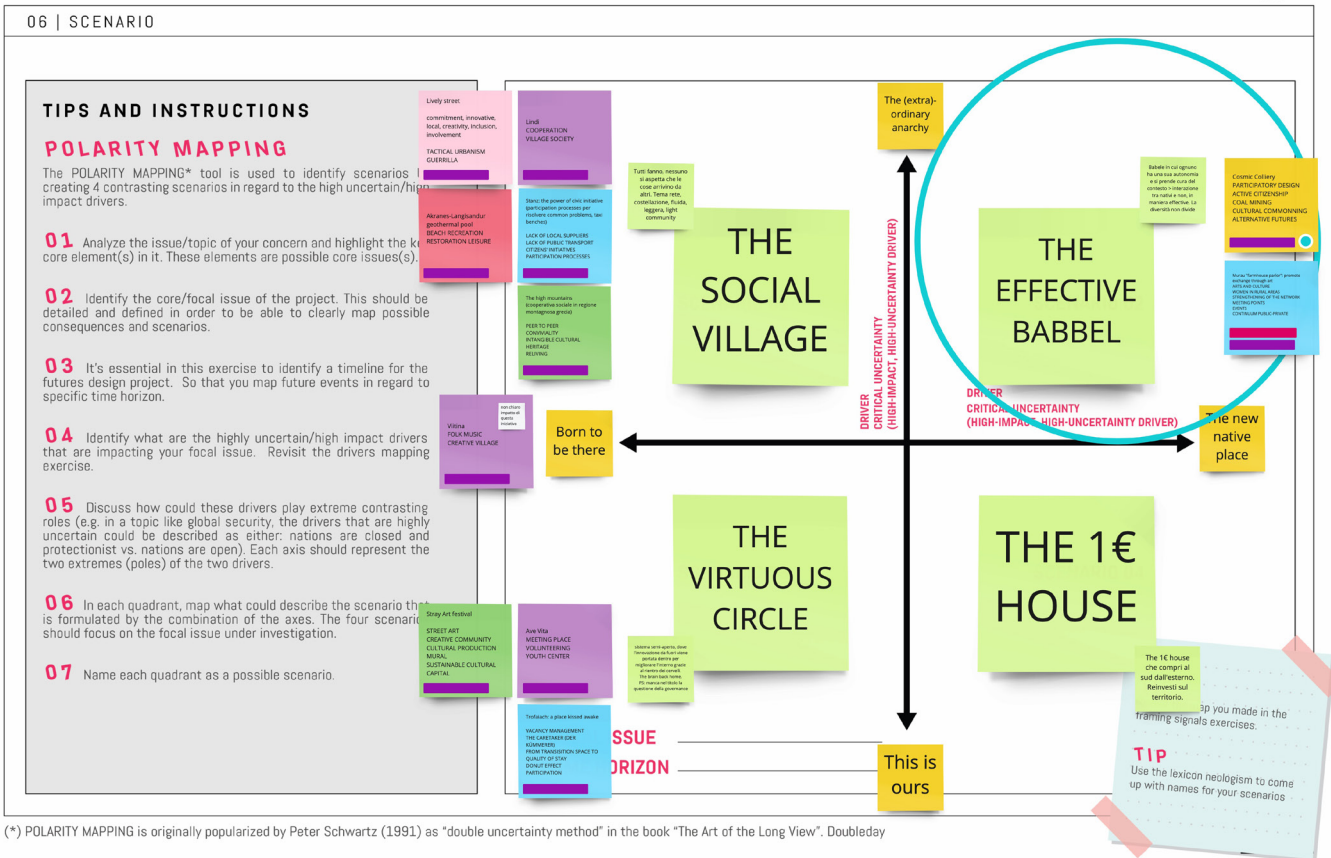


Figure 16 ►
Polarity
Mapping,
Scenario
Canvas, Futures
Design Toolkit
(FUEL4Design,
2021), Applied
by SMOTIES PoliMi
Team to develop
the SMOTIES
Futures ToolBox.



need, time and resources available.

Figure 15 represents a visual guide on how to read the *Toolkit* booklet and what each section indicates. The *Toolkit* booklet is available to download from the FUEL4Design website as an open resource.

Reflections

The Design Futures Toolkit as materialisation of methods

When facing the creation of a toolkit primarily addressing educators and students, we need to understand both the characteristics of the intended users as well as the potential attributes of the toolkits themselves. In the attempt to join futures and design methodologies one of the emerging and evident issues was the immateriality of futures and the impossibility, or the great difficulty, in translating futures methods into something that can be visible, touchable, and grasped by educators and students. The tools and toolkit, for a newcomer, through their capacity of formalising processes and possibility, translating steps and practices, is a means to start an anticipatory project or exploration.

The *Futures Design Toolkit* as open-ended collections of suggestions and instructions intends to enable teachers to try different stimuli along the design educational path exploiting different ideas, building multiple configurations, and proposing also different mindsets and frameworks that are underneath the tool itself. The students,

as final users, can be involved in the tools' usage under teachers' guidance but, in our experience, once the potentials are unveiled, students become curious and start to test tools by themselves as a personal resource to explore project directions.

In FUEL4DESIGN our intentions the *Futures Design Toolkit* was addressing mainly teachers of master's and PhD students. Nevertheless, applications have already been performed elsewhere in bachelor's classes, in research and this suggests the *Toolkit* might also be applied by professionals. In this sense, impact is potentially large by way of spreading this open source material in the design context at different levels beyond the educational purpose.

Engaging with impact

One of the interesting growths of the *Futures Design Toolkit* was its meta-design and metacognitive application in a EU parallel research inquiry. 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 [see Figures 16

▼ Figure 17
SMOTIES final scenarios developed through the Futures Design Toolkit.

KeyTool/How to familiarise with the Windows on the Future?



<div>Window on the Future 1 "Project" Communities</div> <div>SCENARIO 1. The virtuous circle</div> <div>Semi-open system, where innovation from the outside is brought inside thanks to young creatives who return to their home town with new experiences and abilities to share and put in practice for innovative solutions or giving form to creative hubs.</div> <div>Tool 0</div>	<div>Window on the Future 1 "Project" Communities</div> <div>SCENARIO 2. The social village</div> <div>Creativity is a constellation of actions emerging from a network of citizens. Platforms (physical and digital) enable this to happen.</div> <div>Tool 0</div>	<div>Window on the Future 1 "Project" Communities</div> <div>SCENARIO 3. The 1€ house</div> <div>Local projects and policies are put in place to attract talents and people interested in living in a better place. Pilot projects can experiment new ways of attracting people interested in being engaged in an active community building life project.</div> <div>Tool 0</div>	<div>Window on the Future 1 "Project" Communities</div> <div>SCENARIO 4. The effective babbel</div> <div>Creative solutions emerge from the integration of native and non-native people. Diversity does not divide but is an opportunity for learning and evolving. A positive Babel in which the creativity of each person is engaged for taking care of common interests.</div> <div>Tool 0</div>
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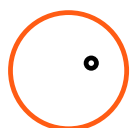
& 17]. The SMOTIES project belongs to the Human Cities network involving, since 2006, design, art and architecture universities, centres and consultancies. Spanning all Europe, the network acts as a platform of interdisciplinary exchange, examining the liveability of public spaces by using participatory Design as an approach to supply systems of process and innovation.

The SMOTIES POLIMI team used the *Futures Design Toolkit* as a meta device with two aims:

1. *generating intermediate scenarios to start the dialogue within the involved communities and the partner institutions, and*
2. *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. These novel learning and teaching materials for emerging interdisciplinary and anticipatory practices seem to have the possibility to influence and cross-pollinate other disciplines connected to design practice and it is open to further developments and appropriations.



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PART II.
ELABORATING

ENACTING



105:
FUTURES
LITERACY
METHODS



BY Manuela Celi & Ammer Harb





Orientation

Framing the work

Context, aim and purpose

The fifth intellectual output of FUEL4DESIGN project is the *Futures Literacy Methods* and related methodologies. We frame this stage as the enacting stage where all the previous IOs merge and melt into one pot. The aim of this intellectual output, the *Futures Literacy Methods*, is to transform and convey FUEL4DESIGN outcomes into learning processes.

Learning *Future Literacy Methods* concerns both the preparation of a complete Futurist Designer training course and the design of small Independent Learning Units to crossbreed design studios or speculative/theoretical courses. The Units are specifically created to cater to the needs of future literacy and geared to acquire knowledge on anticipatory practice, critical future design and future-making through the dedicated tools.

The IO5 units form a meta-structure for educators to facilitate, support and help them in developing their design for future courses. The Units are guidelines, resources and references that aim at:

- a) Supporting educators in building their syllabus and developing their pedagogical practice, and
- b) Guiding educators in developing their teaching tools, methods and methodologies.

Two core innovations

In IO5, there are two core innovations. The first concerns the roadmap for reflecting on the project process and practices. It works to activate meta-design practices and to allow students to learn from their own experiences. This is not just the delivery of tools and resources but given instruments to reflect on them and use them in an anticipatory way.

The second innovation refers to the delivery of the output guide that supports how to translate future concepts into visual forms. New knowledge will be informed through concepts, student cases and examples of such transformations and transmodality in use.

To additional main elements

In addition, IO5 produced two main elements. The first is the production of the course modules. This activity develops the course outline, the scripts and the content for the learning units (including mock-ups of the learning units and the development of templates).

The second element is the Transformation and packaging of the developed resources into learning objects. A limited set of the learning unit developed will be converted into 10 learning objects making themselves self-contained and 'stand-alone' to be used.

An overall set

Future literacy methods gather outcomes, resources, tools and references from all the previous steps of the project providing a training kit that is designed to support theoretical and multidisciplinary learning, work-based situations, and learner-centred and problem-based learning.

In the following sections, we will describe how the content units and the paths developed over time and what process informed them and how we developed the meta-framework structure.

Joining the Dots

Mapping complexities

At the beginning of the process, our main task was to join the dots between the different branches of the project and to filter, select and layer the different complexities and functions of the educational contents.

We were confronted with the question of how we can preserve the richness of the research, preserve the plurality of the different schools' approaches and to organise it in a framework sense allowing other teachers' communities not only to use the materials but to reframe it according to their positionality and sensibility?

The biggest challenge in framing FL methods and methodologies is to dissect all the elements of the intellectual outputs into actionable, usable paths for educators to implement in their work.

Making sense of the pedagogical methods and methodologies sparked by analysing and then connecting the project output to each other. The maps created were meant to dissect the different processes and paths into several sections, to create learning paths by which we wanted to make the content easier to digest and adopt by educators.

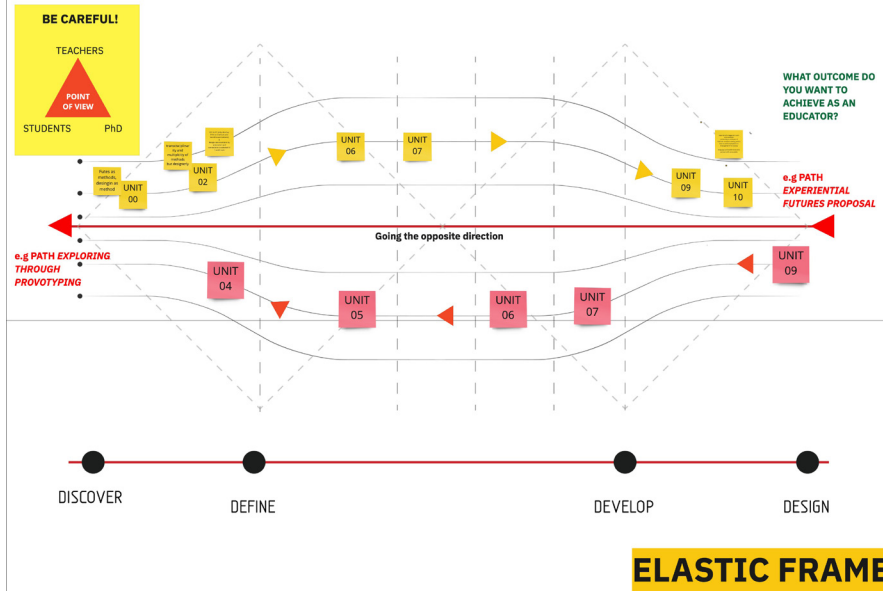
Moving to practice

Each IO produced many elements and sub-elements that we wanted to position and situate over the educational units and learning objects. To make the connections between the units, each element in all the intellectual outputs was mapped and identified. The elements were clustered, grouped and connected with each other.

⌚ 20 mins

PATHS & POSSIBILITIES #1

WHAT ARE THE POSSIBLE PATHS
ONE CAN ADOPT IN A FUTURES COURSE?



◀ **Figure 2**
Workshop with partner institutions to develop Futures methods roadmaps and paths.

This is to ensure the positioning of the tools and methods along with the educational activities in each IO to make sure the activities are well supported with actions and a 'how-to' guide. These connections were developed through detailed and extensive workshops, to clearly identify what could be the different learning paths that incorporate the different learning objects as well as the tools and methods produced during the project.

Generating a key statement

The outcome of the extensive workshops resulted in generating the statement for this intellectual output which was:

FUEL4Design gives the opportunity to generate and navigate experimental, non-linear learning pathways to future-making from transdisciplinary positionalities through reflexive/critical enactments with scenario building artifacts.

This statement was a guide and a triggering point to develop the educational units.

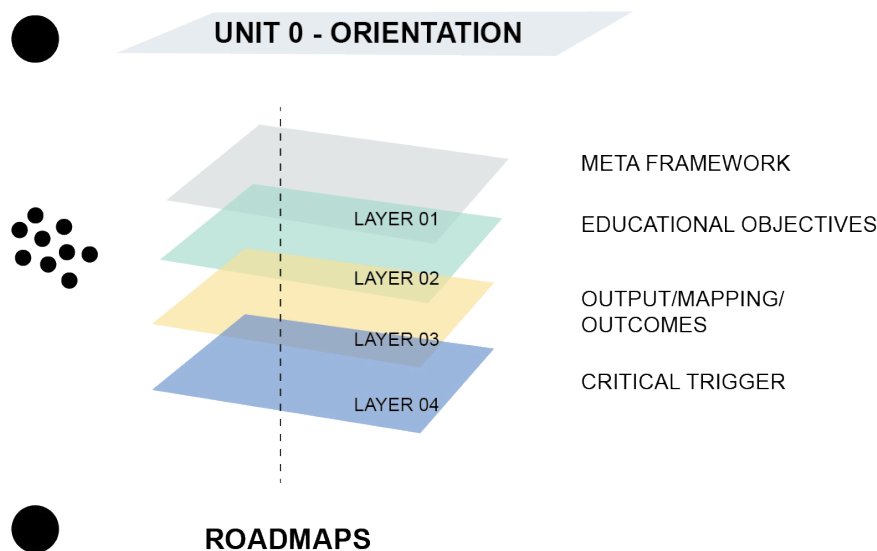
On the Futures Literacy Methods

Focus on Section 02: The Meta framework

Units' formation and structure

Being inspired by the idea of an object-oriented model for our learning system, and in order to avoid a procedural and linear approach, we decided to develop our paradigm as a multi-layered educational model. The initial meta-framework allows us to organise the FUEL materials according to different ways of knowing.

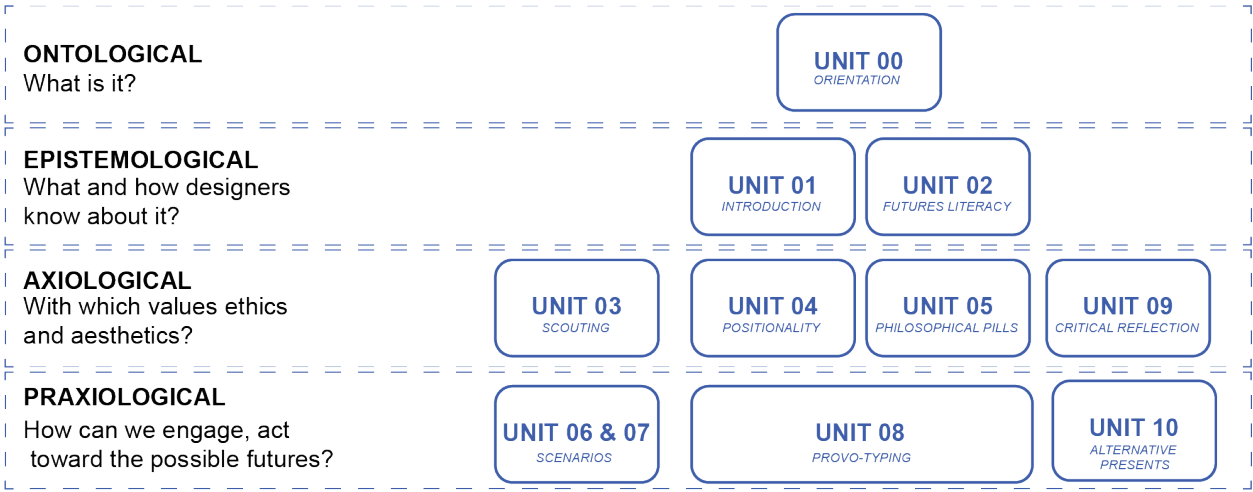
The meta layers organise the unit structure in order to identify the Ontology of futures or better basic information and a proper lexicon to understand and discuss what are futures. The Epistemological layer is connected with what and how designers know about it. The Axiological layer inquires about values, ethics and aesthetics that underpin and motivate design praxis (the ultimate level) that, in turn, explains how we can engage and act to switch a transformation toward different futures in the Praxiological layer.

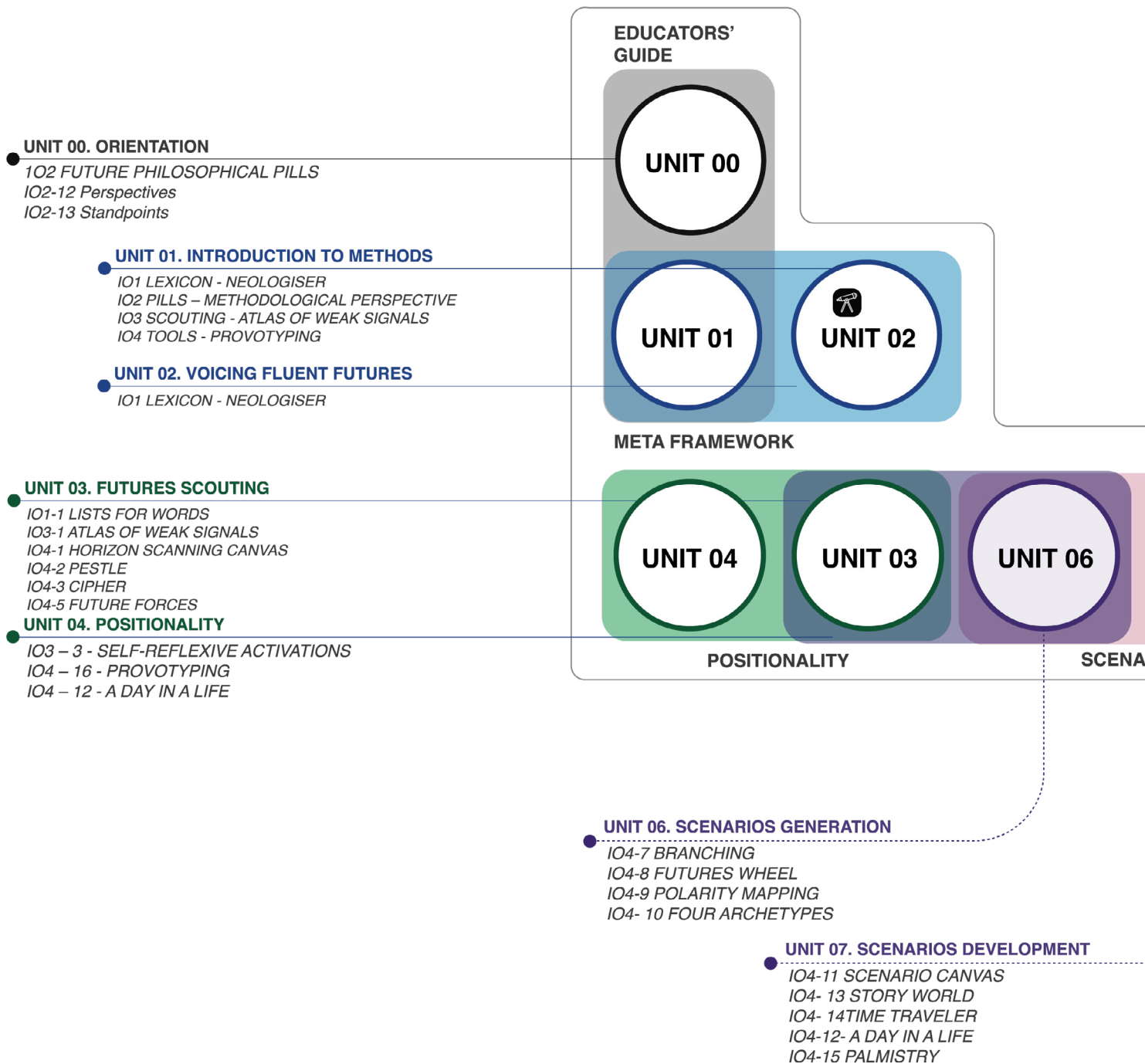


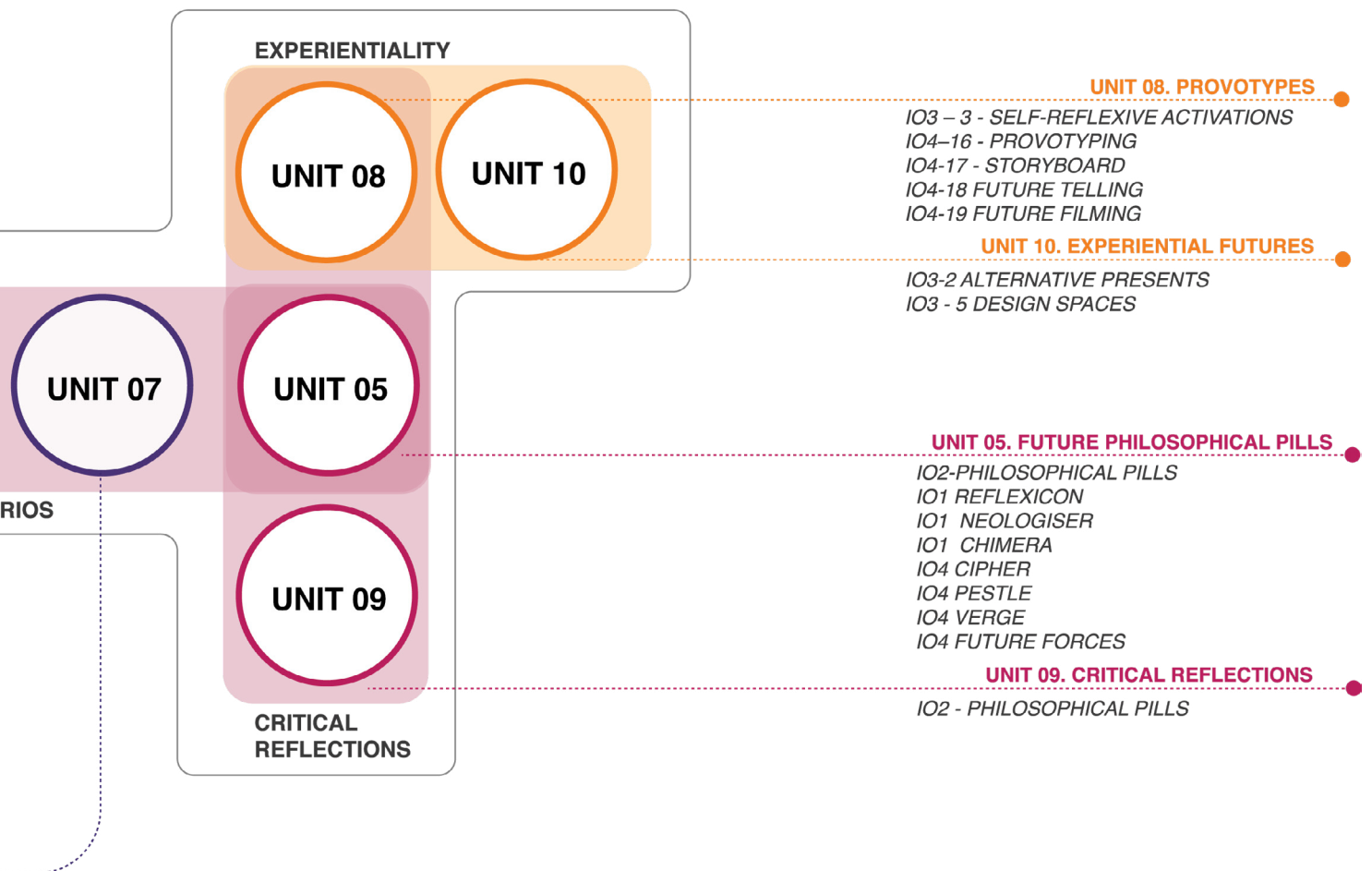
◀ **Figure 3**
The meta
framework.

Figure 4 ▼
Meta-layers of
organising unit
content and
relations.

The Meta layer guided both the organisation of contents and the selection of them. In parallel, we have identified the correspondent Key Competencies and a big effort was made to define a unit structure able to optimise the methodical resources for higher educational institutions, particularly their curricula, syllabi, schedules, and studies in addition to adding a critical and reflexive layer.







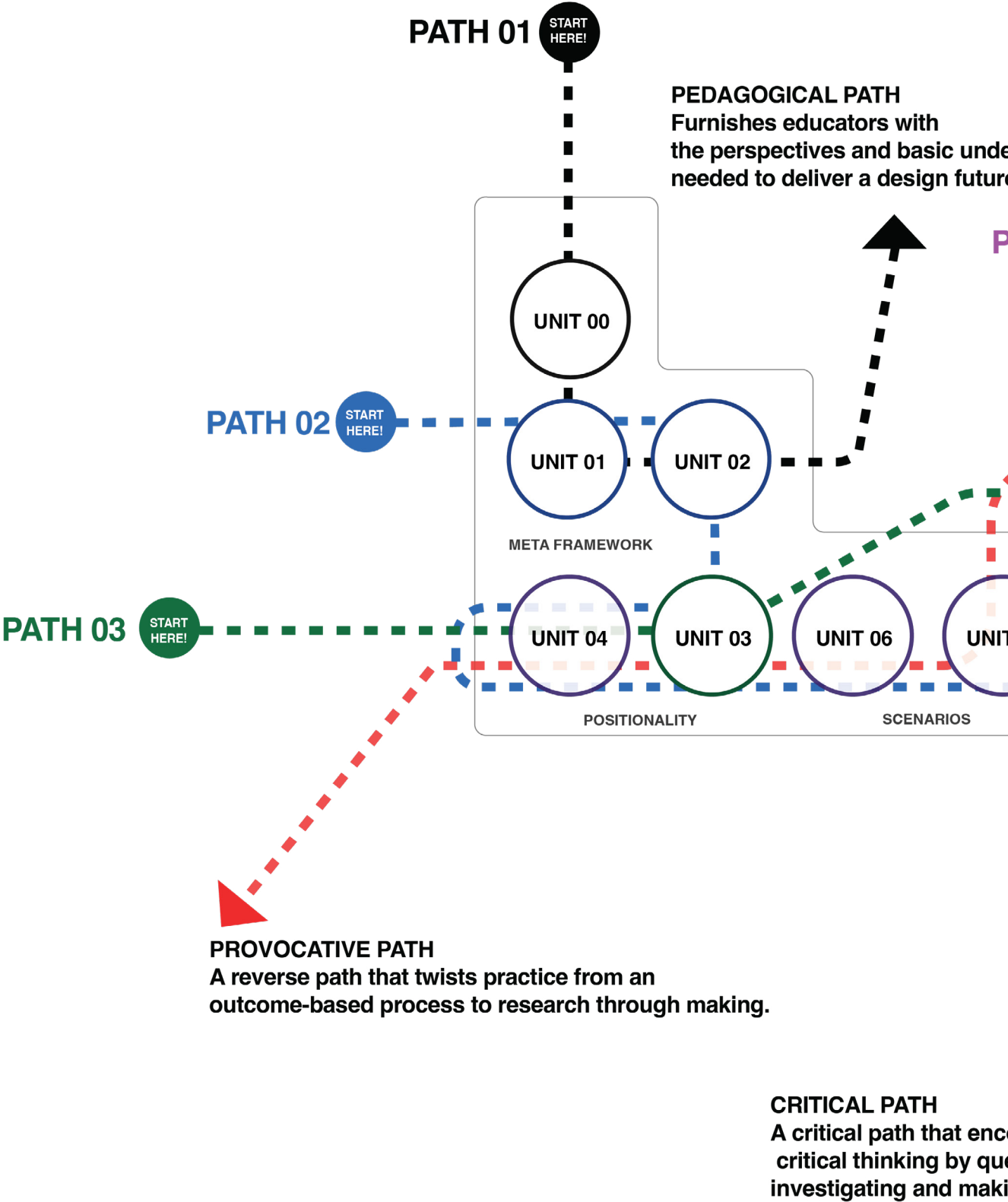
▲ **Figure 5**
Road maps, Units
Guide.

EDUCATORS' GUIDE

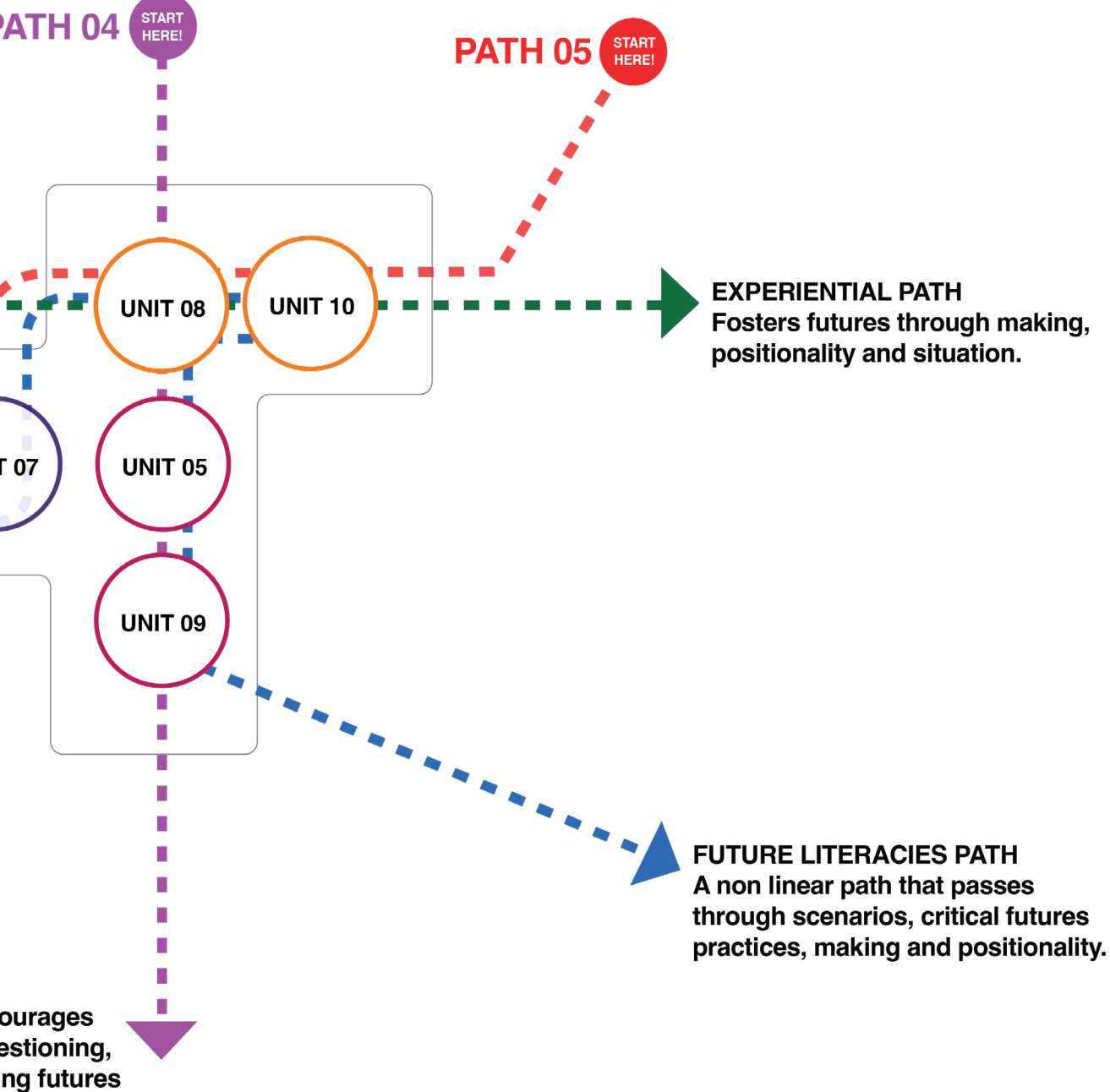
TO FUTURES LITERACIES METHODS AND METHODOLOGIES

THE PATHS

Suggested pedagogical paths through the units



Understanding
es course



Focus on Roadmaps and Units' Structure

ROAD MAPS: Units Guide

Roadmaps were developed to reflect on the project process and practice and activate a virtuous meta-design practice.

The Units Maps provided in the FUEL4Design website and in the first section of the Units booklets help educators in navigating through the eleven Units. These maps are meant to be used as suggestive paths rather than prescriptive ones.

Learning *Future Literacies Methods* concerns both the preparation of a complete Futurist Designer training course and the design of small Independent Learning Units to cross-breed design studios or speculative/theoretical courses.

The modular structure provided by the booklet and the variety of materials provided by the multilayered structure of the methods will allow teachers to mix different types of contributions:

Codified knowledge (historical, philosophical, methodological contents and cases on designing futures);

Critical knowledge (lenses through which to challenge the actual view of the present and open futures);

Contents and triggers of reframing know-how (projectual knowledge able to insert/exploit agents of change); and

Tools to facilitate the reframing process.

ROAD MAPS: Paths

In the Roadmaps, we presented five paths, each path is a suggestion and key to navigating through the units and structuring the educational course. The paths were designed to support educators in making a logical sense of the meta-framework of the units.

However, it's worth noting that the units are designed as independent learning objects, the paths don't have to be followed. They are suggestive rather than prescriptive. They are open to modifications, reshuffles and hacking as long as this occurs in relation to a critical positioning and a future vision full of awareness but also capable of looking critically at the learning outcomes and what needs to be conveyed in the educational curricula.

Outline of paths

The paths were:

Pedagogical Path: Furnishes educators with the perspectives and basic understanding needed to deliver a design futures course.

Future Literacies Path: A non-linear path that passes through scenarios, critical futures practices, making and positionality.

Experiential Path: Fosters futures scouting, design, and exploration through making, adopting different positionalities, and situational experiences.

Critical Path: Encourages critical thinking by questioning, investigating, and making futures.

Provocative Path: A reverse-path that twists practice from an outcome-based process to research through making.

Cases

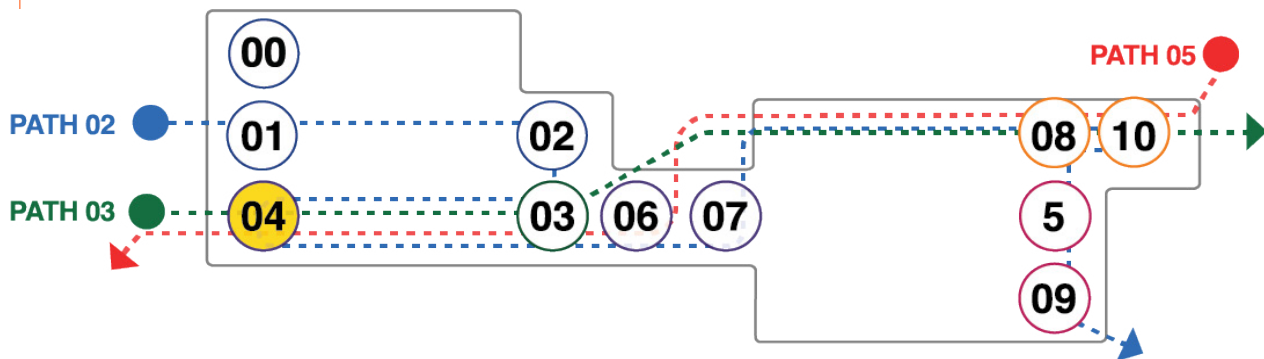
PoliMi Futures Fictions 2022 is part of the concept design studio for Master's students of integrated product design at Politecnico di Milano, the aim of the concept design studio is to stimulate the students for the definition of a product/service concept and scenario, valorise the experience and creative dimension.

In this case, students developed a critical provo-type about the perception of time and its connection with work policy and rules. In this scenario, universal entropy has reached a point where borders are blurring more than ever before, ushering people into the next phase of their evolution. The inclusion of surrounding arms, neck, and back framework ensures that the workers are forced to adopt a more contracted and immobile posture, reducing body stimuli. This represents a prompt response to scientific results which have suggested that underestimations in interoceptive time perception are connected



◀ **Figure 7**
Provo-typing
in a critical
learning path.
BOW by students
of the Polimi
Futures Fictions
Course 2022,
Politecnico di
Milano by Helen
Berhanu Tekle /
Filippo Bugni /
Matteo Corradini
/ Sabrina Gadotti
/ Elena Scarpelli /
Zixin Zheng.

to different psychological conditions characterised by a diminished processing of high salience stimuli from the body. The Provo-type shows a device that forces the workers to be inclined on their desks while manipulating their senses so that their perception of time is altered.



◀ **Figure 8**
Units positioning
and connections
with other units in
the paths

In each unit, the connections are explained through a map that shows how this particular unit is connected with other units of the booklet and where it is positioned along the path.

Educational Units

Summary of Units

Eleven units are presented in this intellectual output, including an orientation unit (Unit 00) and ten educational content Units (Units 01 to 10).

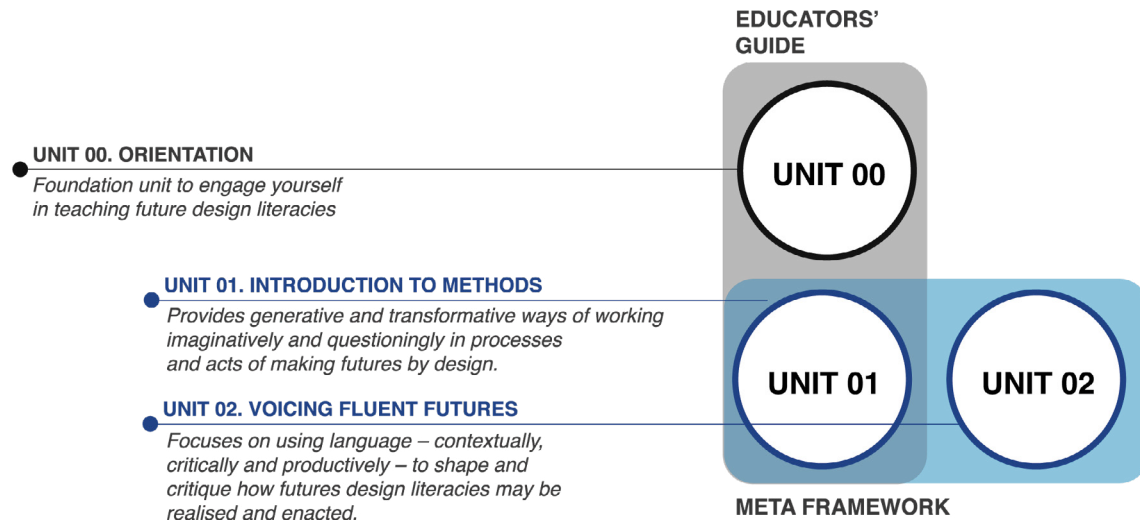
The basic concept behind these units is to be independent (yet connected). Educators are free to select the suitable units for their courses, put them together and structure their pedagogical paths based on their needs as well as the context of use.

The units we clustered in groups that followed the framework of structuring all the units. Each group of units indicates future literacies aiming at providing educators with suggestions for suitable content and activities as well as tools and devices to use.

The Units are specifically created to cater to the needs of future literacy and geared to acquire knowledge on anticipatory practice, critical future design and future-making through the dedicated tools.

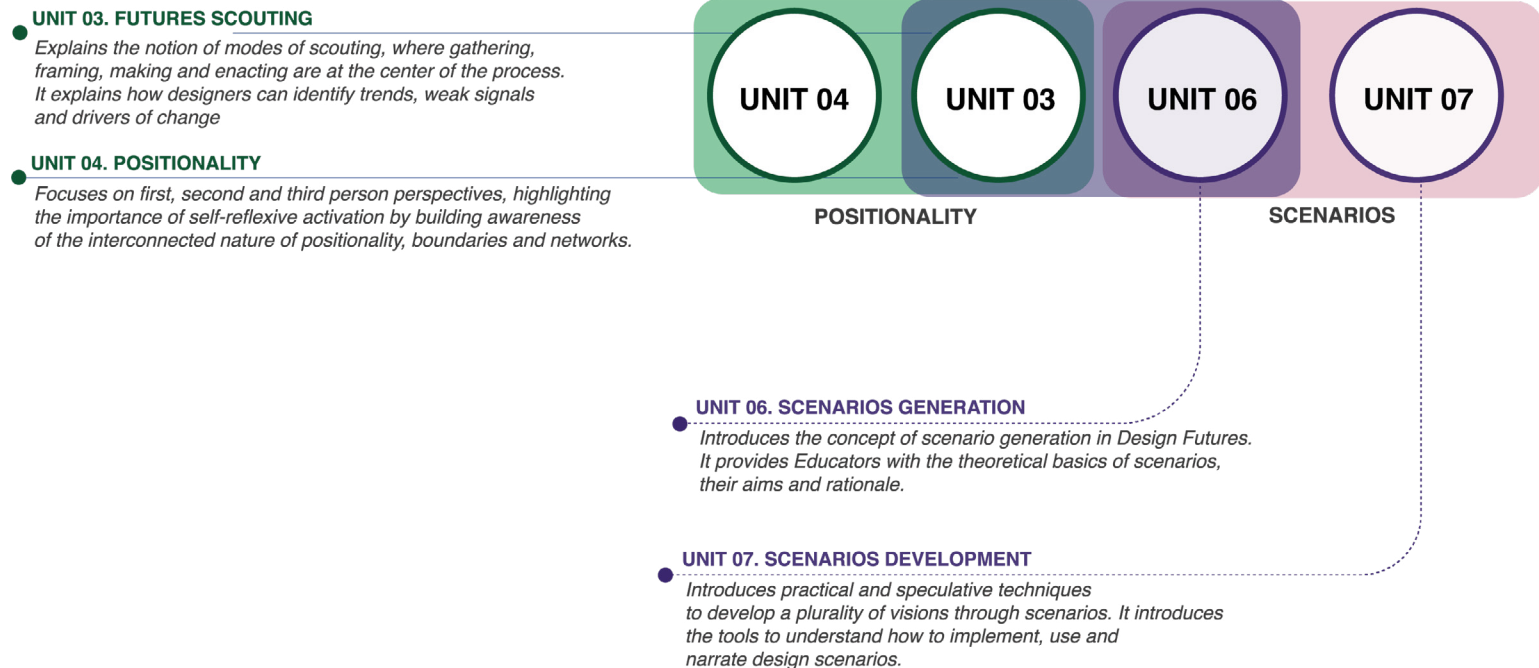
Orientation

Our educational journey starts with Unit 00 – or better the ORIENTATION that provides the foundation for educators to engage in teaching future design literacies. It enables teachers to deconstruct your prior learnings. It challenges you to re-evaluate your teaching practice - within a group or alone- fostering self-criticality at the intersection of future design literacies and your teaching practice.



▲ **Figure 9**
 Units covering
 Orientation.

▼ **Figure 10**
 Units concerned
 with Futures
 Making.



You will find this unit coupled with other units as we consider teacher awareness and critical positioning, prior to every kind of activity in future-oriented education. Through reflecting on your positionality and its influence on your actions, you will be invited to identify spaces for inclusive interventions with the potential to transform peer or student experience.

As future methods are not neutral transactions, **Unit 01** will critically help teachers in constructing and positioning how we build generative and transformative ways of working imaginatively and questioningly in processes and acts of making futures by design.

On **Unit 02**, the focus is on using language – contextually, critically and productively – to shape and critique how futures design literacies may be realised and enacted this will be developed on two layers:

1. Framing, Unpacking, Mapping: clarify relations and practices between the 'whats and whys' of how 'futures' is shaped and on futures as a plural, diverse and dynamic concept and knowledge domain.

2. Voicing, Enacting, Positioning: where central are ways to work critically with relations between language and power, and where language is a medium and a marker of the world views.

Futures Making

The second group of units is connected with future making and the most “hands on” activities familiar to designers

Unit 03 explains the notion of modes of scouting, where gathering, framing, making and enacting are at the centre of the process. It explains how designers can identify trends, weak signals - early indicators of change that have the potential to trigger major events in the future - and drivers of change by positioning themselves closer to the researched issues or topics.

Unit 04 explains first, second and third-person perspectives, highlighting the importance of self-reflexivity and self-reflexive activation by building awareness of the interconnected nature of positionality, boundaries and networks.

Cases

PoliMi Futures Fictions 2021 is part of the concept design studio for Master's students of integrated product design at Politecnico di Milano, the aim of the concept design studio is to stimulate the students for the definition of a product/service concept and scenario, valorise the experience and creative dimension. In this case, students developed a scenario about anarcho-evolutionist society, in which people aim to live in perfect harmony with nature, respecting it in the same way they respect each other.

This device, in the form of a jewel, hosts a particular species of bacteria able to generate bio-luminescence. Contact with human beings permits it to live and prosper, feeding off dead skin cells while helping them see and communicate with each other at night.



Scenarios

Units 06 and 07 are devoted to Scenarios. The first one introduces the concept of scenario generation in Design Futures. It provides Educators with the theoretical basics of scenarios, their history, their aims, and rationale. The unit explains the basic pillars of scenarios reflecting on their impact and readiness for development.

On the other hand, Unit 07 focuses on practical and speculative techniques to develop a plurality of visions through scenarios. It introduces the tools to understand how to implement, use and narrate design scenarios.

The Futurist Designer

Units 08 and 10 move the action of the futurist designer to another stance pushing toward an experiential dimension.

This unit creates a space for students to explore the role of provocative prototypes (Provo-types) in shaping critical future visions; Provo-types challenge user expectations, sometimes with intended 'frustrating artefacts' to accentuate and highlight the issue of debate. Educators can introduce them to trigger the critical dimensions for design students encouraging the arena of alternative design practices.

▲ **Figure 11**
Scenario Making
+ Provo-typing,
FUEL4DESIGN
Futures Design
Toolkit. SIRIUS:
Symbiotic light
by students
of the Polimi
Futures Fictions
Course 2021,
Politecnico di
Milano. by Moritz
Bisjak, Youzhi
Chen, Anamary
Fernandez,
Isabella Gianni,
Stanislaw
Jancelewicz,
Ginevra Longo,
Zhang Renyuan,
Stefano Rombolà,
Chuai Shiyang,
Alessandra
Tardanico.
(ELISAVA, I03,
FUEL4DESIGN).

EXPERIENTIALITY

UNIT 08

UNIT 10

UNIT 08. PROVOTYPES

Creates a space for students to explore the role of provocative prototypes (provo-types) in the shaping critical future visions of Designing Futures.

UNIT 10. ALTERNATIVE PRESENTS

Provides the foundation to carry out research through design, showing the relation between theory and practice as it is related to the experiential in designing futures literacies. Helps designers to generate alternative presents through design interventions that embody desired futures and help understand and experience the needs to provoke these transitions.

◀ **Figure 12**
Units 08 and 10 address The Futurist Designer.

Alternative presents

Unit 10 focuses on Alternative presents and the strategies for community engagement concerning cooperative modes of future, allowing for experiencing futures with others. It aids designers in generating alternative presents through design interventions that embody desired futures and help understand and share the needs to provoke these transitions.

Critical Reflection

This last group of units is connected with Critical Reflection. The future can be envisioned in so many ways: as a space of the unknown, as a horizon of potential, as a risk to manage, as a problem to pre-empt. It can be said that this variety of approaches is what drives humanity to a constant search for strategies of inquiring, forecasting, divining, and prophesying.

UNIT 05

UNIT 09

UNIT 05. FUTURE PHILOSOPHICAL PILLS

Foregrounds the importance of philosophical concepts to critically interrogate established notions, beliefs and assumptions around the future; it provides strategies to amplify our capacity to imagine, speculate and anticipate different futures;

UNIT 09. CRITICAL REFLECTIONS

Encourages you to place criticality at the center of your engagement with the intersection Design/ Futures /Literacies. inviting you to critically re-examine the work done so far; to twist the perspective already gained during one of the other pedagogical activities.

◀ **Figure 13**
Units 05 and 09 address Critical Reflection.

CRITICAL REFLECTIONS

Unit 05, The *Philosophical Pills* shows how philosophical theories can be deployed to this task. It foregrounds the importance of philosophical concepts to critically interrogate established notions, beliefs and assumptions around the future; it provides strategies to amplify our capacity to imagine, speculate and anticipate different futures.

Being 'critical' means to intentionally adopt a stance of 'detached evaluation' so to create enough distance between you and what you are investigating. Unit 09, invites

PHASE 02 | FRAMING SIGNALS

TIPS AND INSTRUCTIONS

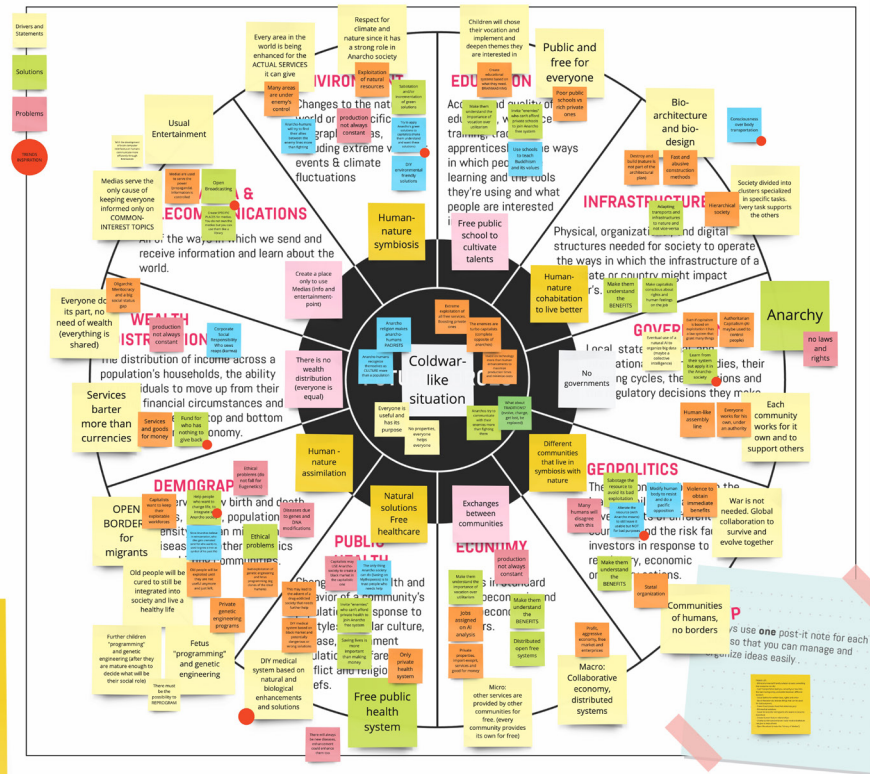
FUTURE FORCES

Future does not evolve on its own, in a vacuum. Trends are subjected to and shaped by external forces. Just as it's useful to organize our thinking along a chronological path through time zones,

In FUTURE FORCES*, the sources of macro change represent external uncertainties & factors that broadly affect business, government and society. It lists 11 sources of macro change that are typically outside of a leader's control.

- 01** Give yourself sometime to read and interpret the clusters made in the Horizon Scanning exercise.
- 02** Read the description in the template clearly and make sure you and your team members are standing on the same ground.
- 03** From the clusters you've created, segment the gathered trends, concepts, drivers in the FUTURE FORCES template
- 04** Always remember to focus on events and drivers that are impacting the future of your topic in each category
- 05** Give yourself sometime for discussion to share concepts and ideas with each other.
- 06** In each section, have another layer of order in terms of urgency, priority or relevance. This would make it easier to narrow down your focus in the next stages

- TREND LIST:**
- DIY based on nature
 - Non physical transportation
 - Social awareness and shared knowledge
 - Beneficial genetic modification (food/good alteration)
 - Symbiosis



(*) The 11 Futures Forces is developed by FTI Futures Policy Institute - Open Source Foresight Tools



Figure 14 ▲
Futures Forces
+ Philosophical
Pills, FUEL4DESIGN
Futures Design
Toolkit. Filled
by students
of the PoliMi
Futures Fictions
Course 2021,
Politecnico di
Milano.

you to critically re-examine the work done so far. This is to twist the perspective already gained during one of the other units (e.g. Unit 07- Scenario Making; Unit 08 – Provo-typing); it is also to challenge the trajectory taken and the assumptions behind it so that the final design propositions are re-invigorated and critically galvanised.

The 'Future Forces' is a tool that supports designers to analyse the future in regard to 11 forces that drive the future. Students used the Futures forces canvas to map relevant trends to their projects in order to fully understand their focal issue and to be able to produce a future timeline. Students also applied the *Futures Philosophical Pills* to challenge the outcomes of the mapped trends and rethink their findings.

FUEL4DESIGN gives the opportunity to generate and navigate experimental, non-linear learning pathways to future-making from transdisciplinary positionalities through reflexive/critical enactments with scenario building artifacts.

PoliMi Futures Fictions 2021 is part of the concept design studio for master's students of integrated product design at Politecnico di Milano, the aim of the concept design studio is to stimulate the students for the definition of a product/service concept and scenario, valorise the experience and creative dimension.

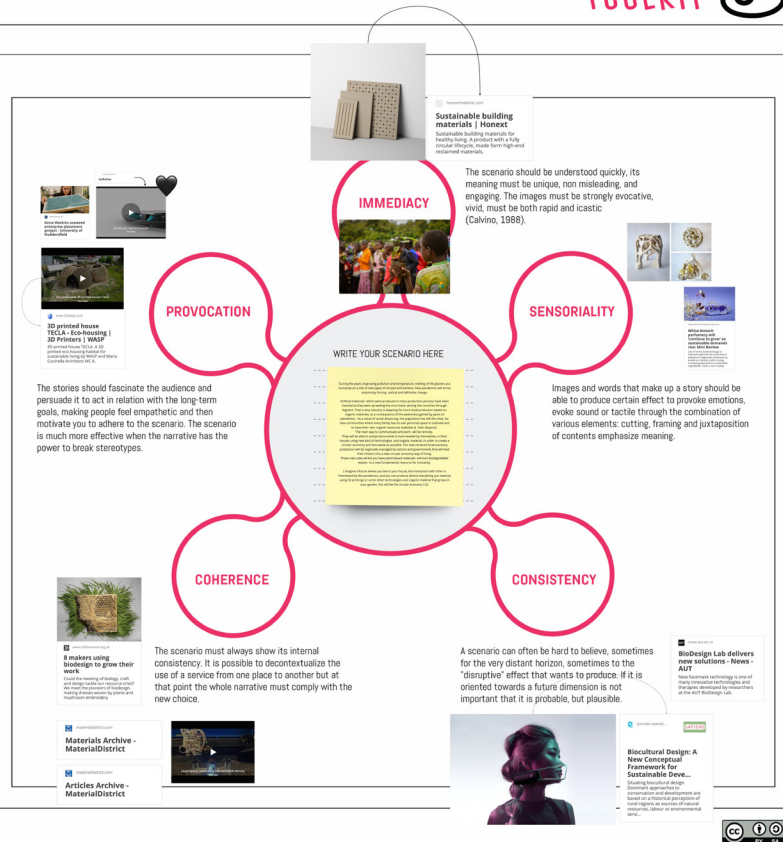
PHASE 06 | SCENARIO

TIPS AND INSTRUCTIONS

SCENARIO

SCENARIO is a powerful tool to envision possible futures. In this stage you should select one of the scenarios developed in the previous phase then develop it into a comprehensive scenario.

- 01** Quickly analyse the main elements that emerged from the scenario you've developed
- 02** Read the categories carefully in the scenario making template. Discuss them with your team and then situate your ideas in each category.
- 03** Use visual aiding material including, images, videos and sketches to describe intangible meanings and directions.
- 04** Consider social, cultural and technological contexts of the world you're building.
- 05** Write your scenario in the middle of the template.



◀ **Figure 15**
Scenario Canvas,
FUEL4DESIGN
Futures Design
Toolkit. Filled
by students of
the PoliMi
Futures Fictions
Course 2021,
Politecnico di
Milano.

In this particular case, students used the Scenario canvas to develop a scenario for their future project. One of the aims of this canvas was to dissect the elements of the scenario making and to add a visual research layer to the project. It supports designers in further developing their project with detailed elements that reinforce the project's consistency and coherency.

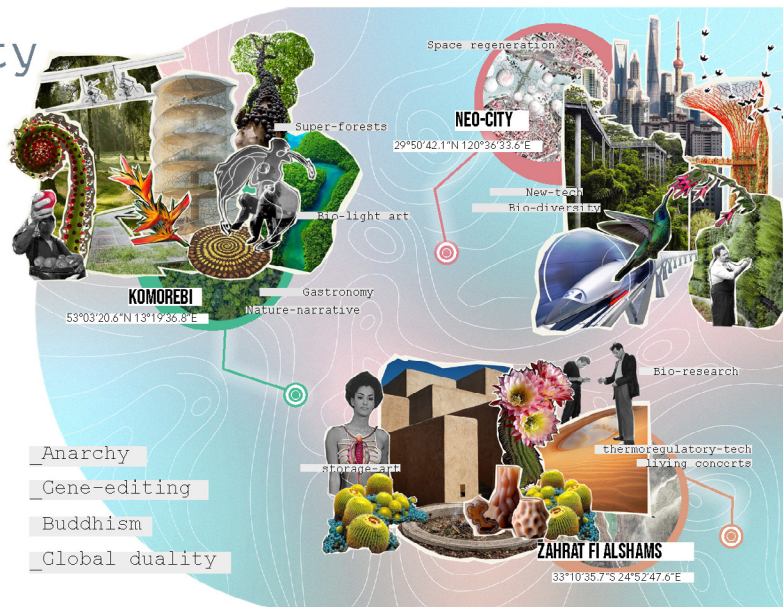
Symbio-ciety

After the polarization of the society in two different groups, the world has taken a completely different shape. The majority of the Earth's surface is covered by forests and woods, in which human settlements are perfectly integrated. Only a few spots of old society are left, where big cities were placed in the past. In these places, people still try to recreate the hegemony of technology.

The rest of the villages are equally diffused in all the territories, strictly intertwined with the animal and plant populations, in a relationship of mutual support. Plant have a central role in structural and medical applications, while animals are involved in transports and the creating of renewable energy. The cult of Buddhism has a key role in the society of the symbiosis with nature, spreading the sense of diffuse love and empathy. Differences between the past and the present are clear and tangible.

Today, the majority of people do not live in cities anymore; embracing the condition of sons and daughters of Mother Nature, they consider all the living beings as equals. All the creatures are free to travel their own path, sure of the mutual love and respect permeating the earth. There is no need of laws and rules to observe, since no living entity has any intention to hurt or cause pain to the others. People do not need to feel superior or praised, because the highest fulfillment is consisting in harmony, feeling as part of the same world.

Nowadays the society is based on mutual help: everyone gives what he/she/it can and receives what needs. Communities are mainly organized in little villages. Every community self-sustain itself with mutual work and reciprocal care, maintaining a close relationship with the other villages. The network of communities is one of the things that guarantee the success and the outliving of this society model: resources are shared disinterestedly, and assistance is always provided for everyone.



◀ **Figure 16**
Scenario Making,
FUEL4DESIGN
Futures Design
Toolkit. Filled
by students
of the PoliMi
Futures Fictions
Course 2021,
Politecnico di
Milano.

The Booklet: FUTURES LITERACY METHODS

Units' structure and relations

The Future Literacy Methods is easy to understand and use. Each unit is structured in a format to make it easy to digest and use in developing educational design courses. They follow a 'Unit Information Form' (UIF) template format where there are different sections dedicated to each part of the course-building process. The UIF is the template we used to develop the elements of each unit. It consists of eight sections, each section empowers educators with resources to build their educational courses and paths.

Each unit contains an initial short description of the contents, the educational aims are also expressed by bullet points. The definition of the competencies that students will acquire through this unit in which we followed the SDG key sustainability competencies that we believe we should implement in the educational paths for better futures. There is also a guide on the 'depth of detail' that gives suggestions on how to tailor the content depending on the audience that the educator wants to address.



◀ **Figure17**
The FUTURES
LITERACY METHODS
Booklet. (Image
credit: PoliMi).

FUEL4DESIGN has also provided for each unit a detailed and categorised description of the learning outcomes and supported the development by adding examples of already tested educational activities with the indication of aims, duration and educational methods. In each unit we have also suggested possible tools and devices from FUEL4DESIGN project that are freely available on the FUEL4DESIGN website.

The last part is about Connected cases that were implemented during FUEL4DESIGN, teachers may verify through the road map possible connections with other learning units and for the one that encounters the topic of the unit for the first time, there is a condensed version of possible contents/ authors and updated references where to start your personal research and deepening.

Trialled and available

All the educational materials, tools and methods presented in the Futures Learning Methods Booklet have been tested in real settings and designed by engaging learners

FUTURES LITERACIES PATH
A non linear path that passes
through scenarios, critical futures
practices, making and positionality.

UNIT 01 - INTRODUCTION TO METHODS

EXPECTED LEARNING OUTCOMES

A. Knowledge and understanding	To be able to identify how different methods shape how we know what we know and how we may design futures by design
B. Cognitive Skills	To distinguish between aspects and practices of making and analysing in how we know what we know Identify what 'designerly' ways of knowing might be in shaping design futures literacies pedagogies, designing and researching
C. Practical Skills	Navigate different types of methods and apply them
D. Generic Skills	Navigate different types of methods and apply them
E. Collaborative Skills	Know how different ways and means of making can be realised in co-design

ACTIVITY

Horizon scanning [HERE](#)

Aim

The aim of accentuating this resource from IO4 is to engage teachers and students in the activities of working with Horizon Scanning as a method and means to better understand the content and changes of contexts within which emerging challenges and trends concerning the future may be mapped.

Duration

A working session of an hour, individual/pairs

Description

As a method Horizon Scanning aims to motivate exploration of emerging, new and unexperienced futures and to situate them in relation to the emerging challenges and trends of the present. Scanning for weak signals, macro trends and drivers of change is mapped onto the cognitive and collaborative skills of mapping current activities and sorting them to be able to

process a diversity of mediations (online, on site, interpersonal etc).

Method

Teachers are invited to access the online tool and study how it works as a device for engaging with challenges of key societal futures developments and emerging futures trends. Invite a class of students, working in groups, to activate the tool to critically assess the key outcomes of the COP26 summit. Referring to the goal to not exceed global warming limited to 1.5C. Using the

a) map the projected and actual key decisions arrived at by the summit, b) write a short statement outlining the resulting outcomes and the 'trend' or consequence of the horizons for climate change for low lying communities and nations by 2050.

FUEL+DESIGN

UNIT 01 - INTRODUCTION TO METHODS

ACTIVITY

Design fiction: personas & scenarios (see also Unit 6 and 7) [HERE](#)

Aim
OCTOPUS JOURNEY has been co-designed with sets of movement words generated from inside the fictive, ironic persona of a travelling device. The activity aims to engage teachers and students in critical engagement in a design fiction future narrative activity, scenarios abductively connected to the actual world and to relate them back to their own concerns as design educators and students in the present.

Duration

1-2 hours, individual/pairs/groups of 4

Description

OCTOPUS JOURNEY offers a design fictive method for making more apparent human-norhuman relations by way of a persona and scenario based narrative means. Online materials provide access to methods such as pastiche and counterfactuals. Related research is also accessible.

Method

Teachers and students are invited to travel with the design fiction persona OCTOPUS into 28 imaginary scenarios located in the histories, presents and futures of the North East Passage and related 'Northern Sea Route'. The online knowledge building method engages participants in connecting cognitive skills of 'traveling' to translating the experiences, affect and problems generated to their own actual contexts of translation in the contemporary world.

TOOLS AND DEVICES

From the diversity of methods F4D has assembled, we have selected four examples of different methods. These are:

- IO1 Lexicon - NEOLOGISER (Generation)
- IO2 Pills - Methodological Perspective
- IO3 Scouting - Atlas of Weak Signals
- IO4 Tools - Prototyping (Technique)

We suggest you may wish to select one or two of the method themes (shown in brackets), to consider how the theme is pertinent in an aspect of your own pedagogical resources and work abductively to draw an outline for how you would work with chosen themes and your own

needs and context (e.g. material/medium/context of delivery).

In support of this Unit, views on litera

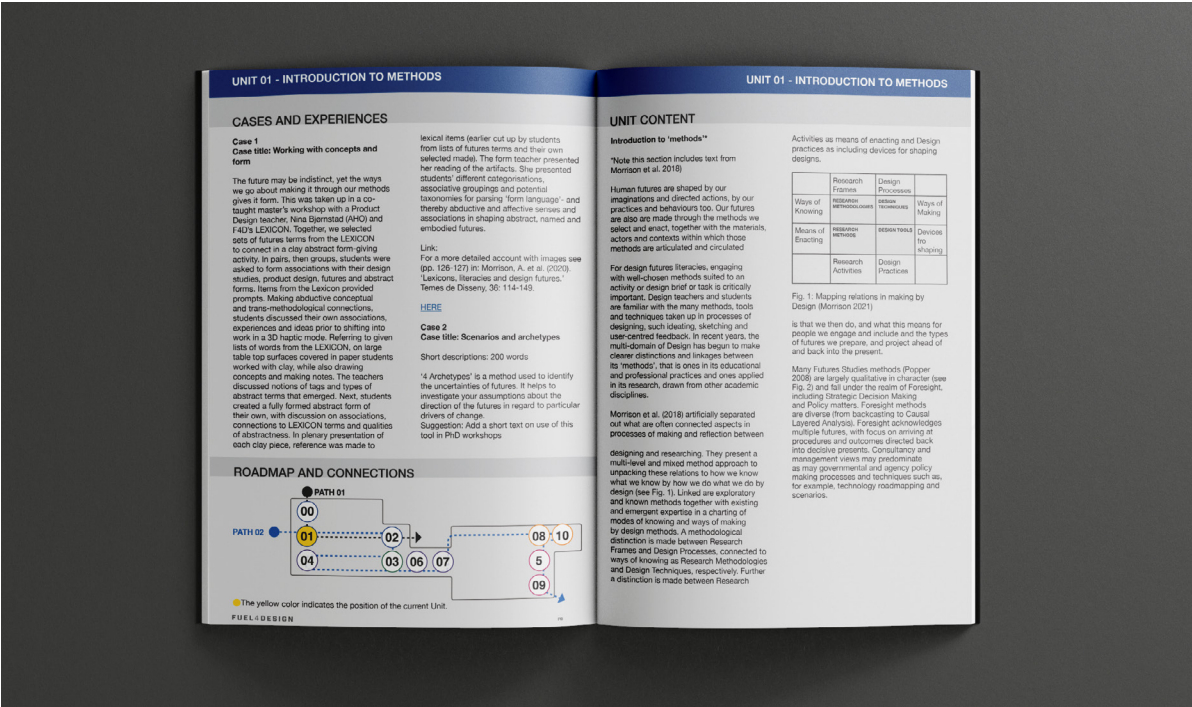
FUEL+DESIGN



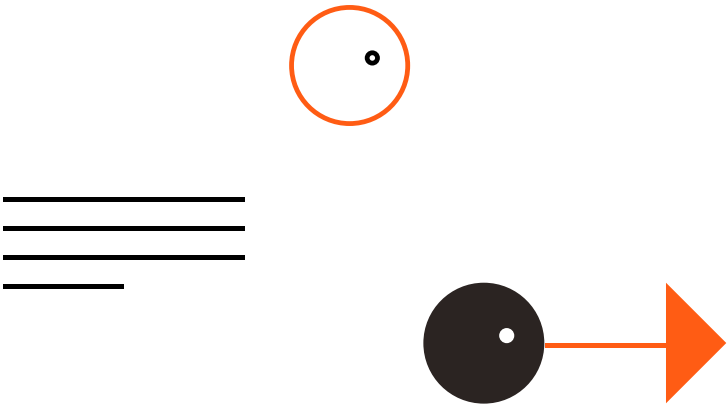
Co-funded by the
Erasmus+ Programme
of the European Union

in an intensive transnational, multicultural and interdisciplinary collaboration engaging not only their technical abilities but also their interpersonal skills.

The Booklet ought to assist educators in improving their future knowledge while divergently personalising and contaminating their educational materials to shed the light on anticipation and critical futures in designers' training.



◀ ▲ Figures 17 & 18
The Futures Learning Methods Booklet and Reading 'depth of detail'. (Image credit: PoliMi).



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PART III

ANTICIPATION

1.
PATIENTING

PART III.
ANTICIPATING



DESIGN EDUCATION RECONSIDERED



BY Andrew Morrison, Bruce Snaddon & Manuela Celi

WITH Ammer Harb, Yue Zou, Laura Clèries, Palak Dudani,
Oscar Tomico, Tomas Diez, Mariana Quintero & Betti Marenko





Introduction

By Andrew Morrison, Manuela Geli & Bruce Snaddon

Plural, dynamic, performative

This chapter follows on from that entitled *On Design Education*. In our view, literacies may be summarised as being plural, dynamic, procedural, performative and affective. Procedurally, they are about formal and technical skills. Performatively they are realised via contextual, cultural and communicative competencies. In terms of affect, they encompass awareness, empathy, and engagement and anticipation. In this section we cover the changing definitions, characterisations and educational approaches to the teaching and learning of literacies drawn from a number of fields: general education, language education, media and technology studies, and futures studies. These approaches to literacies do not always refer to one another, and in particular design and futures literacies seldom specifically mention the large body of work on literacies in education through which they argue for the importance of transformative learning.

Looking ahead, or sideways, or recursively, depending on your reading path, in Volume 2, **Essay 1: Anticipatory Design Literacies**, we emphasise that in adopting a view of design futures literacies in-the-making, our framing is not meant to be universal, absolute or determinist. Rather, it is dynamic, relational and emergent, situated in a diversity of contexts and acknowledging difference and plurality.

The term literacy and literacies are widely used in general discourses on education and are commonly used to refer to skills and competences, most traditionally concerning reading and writing, alongside numeracy that refers to skills concerned with calculation and mathematics. However, the terms literacy and literacies have taken on a range of meanings and definitions that are indicative of changes in materials, modes of communication and performative articulation.

In a more traditional view, literacy has been used to refer to individual skills acquisition and education and originally to apprenticeship models of learning where skills 'mastery' is the goal. This approach sees knowledge as something to be approximated, absorbed and then achieved and where expertise is attainable, replicable and directed towards craft skills accomplishment, repetition and continuation.



◀ **Figures 1 & 2**
Students 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, to create a research Design Space that will grow with their practice for the rest of the academic year. (Image credit: Fab Lab Barcelona).



As modes of formal learning shifted from repetition and ‘mastery’, and in design terms along with modern industrialisation and mass education in the 20th century, a skills-driven approach has become paired with competencies. Accuracy and measurement of functional literacy were extended to social, communicative, and technical literacies, as developmental and performative. Such literacies, increasingly acknowledged as plural and interlinked, shifted to being about negotiation, appropriacy to context and need, to emergent demands and to situations of learning that included expectation and aspiration [See Figures 1 & 2]. The sociocultural realisation of literacies in context and in relation to need and purpose drove versions of such literacies into developments of reflection and criticality as literacies were linked with societal values and the production and circulation of cultures. Such approaches, often sought to inoculate students from influences deemed to be distracting and destructive. However, these were in time overtaken by less normative approaches that lifted learners’ agency and identities in more expressive takes on learning linked to events and learning pathways.

Reconsidering 21st century literacies

In the 21st century views on literacies have shifted to encompass multiple, relational, and non-representational perspectives. These are connected deeply to digital technologies and mediation, distribution and limitation if their embeddedness in software, tools and communication platforms. Global access to means of digital literacies continues to be unevenly distributed while also being enhanced and conveyed by the mobile and wireless character of locative and social media technologies and networks. The ongoing reality of unequal e-learning conditions – of tools, electricity, internet connections and computers (Ng’ambi, et al., 2016) – is starkly shown up by the COVID-19 pandemic especially in the Global South, what Nxumalo (2020: 34) refers to as the ‘asymmetrically distributed precarity’ that many students in previously colonised countries are exposed to. For design futures literacies, a number of issues arise that we have arrived at via dialogues with colleagues and guests to our teaching and research, from participants to the FUEL4DESIGN project, and from master’s and doctoral students.

First, these concern discussing more fully relations between literacies and approaches to teaching and learning, and together with them changing design pedagogical practices. Second, they are to do with unpacking notions and practices of literacies as competencies and how these are articulated in writings and reflections on design education that is often not elaborated to a great degree in terms of learning concepts, models and theories. Third, it is important to further position and discuss design literacies – as well as current and future needs and concerns – as this has tended to be an inexplicit part of design education and has become more explicit as the domain of design education has flourished in the past decade. Fourth, these aspects matter as a shift that is also needed in design education due to the rapid, unpredictable and demanding changes in terms of environment, deep systems and unstable economies, to mention a few. This is to do with design literacies and education being extended, through adaptation, resistance and resilience – and even altered and radically transformed – from a focus on futures of design education, as much of this chapter demonstrates, to active and productive, critical and creative recursive exploration of futures in and through design education [Figure 3].



◀ **Figure 3**
'Hacking Futures'
Philosophical
Pills workshop
at Central Saint
Martins, UAL, 7
February 2020.
Image Credit:
James Bryant).

Outline of chapter

The chapter proceeds as follows. In the next section, we take up core matters of literacies and design. This leads into Section 3 in which we elaborate on legacies and approaches to literacies and transdisciplinary relations between design, futures and literacies. In section 4 we go into more detail on the shaping of these relations between design, futures and literacies, ranging from the imaginary to the pragmatic contextual. We conclude with a short repositioning around design, anticipatory pedagogies and futures literacies through designing. This chapter provides a platform for reading into and reading from the work of the FUEL4DESIGN project partners. It also offers a bridge to the final chapter in Volume 1 entitled **Otherwising Futures Design Learning** that focuses on ways to working and thinking and living with and through alternate perspectives on design education and knowing.

On Literacies and Design

From oracy to 21st-century literacies

Historiographically, literacy concerns the social semiotics of communication about our environment and lives, in different materials, from cave walls and clay tablets, from papyrus to print, to digital media. Developments in tools and modes of production, from the printing press (Eisenstein, 1980) to digital tools and platforms have brought

about massive change. Yet, it has been access to these materials and means and to the acquisition of skills and competencies in their uses that has made possible the resulting process of societal and by extension other aspects of socio-technical transformation.

Literacies have been guarded and privileged, limited by access to languages of religious power and administration, as well as by publishers, and naturally schools, and gendered and class gatekeeping. In his influential *Orality and Literacy*, Ong (1982) elaborated on shifts from oral and real-time modes of cultural communication to the mediated fixing of arguments and narratives in written form, linked to institutions of power and to processes of knowledge generation and dissemination. Street (1984) highlighted that literacy is a social practice, not just a set of skills and that it is realised through our engagement and expression as much as genres and conventions, and his work ushered in a shift to theoretical and practice approaches to literacy as social production of meaning. Much of literacy studies has centred on logocentric modes of formulation and address, itself revealing of the predominance of verbal language as literacy over other communicative modes, though in the 20th century visual communication became a major feature of mediated life, extending into digital, locative and distributive media and expression.

In the past decade or so, design literacy and literacies have been elaborated with regard to media and technology (e.g. Sheridan & Roswell, 2010) and elaboration on design literacy (e.g. Lutnæs, 2021). This elaboration has built on the growth of 'new literacy studies' (Street, 2003) encompassing 'literacy as events' and social practices views (Brice Heath, 1982), extending from local ethnographies to studies of educational systemic views. Educationally this was powered by the rise of critical literacy (e.g. Shor, 1999) and critical language awareness and discourse studies (see LEXICON Overview) fuelled by the work of Freire (1970, 1973) on criticality and power in education. This move, following similar ones in media and media education for example, were often led by normative and preferred ideological views on ensuring critiques of power imbalances and, importantly, accentuated the roles of situated learning in decolonial movements.

Critical literacy also linked developments in critical discourse studies and applied critical linguistics and language awareness, lionised by the transdisciplinary work and manifesto of the New London Group. (1996) and work on multimodality (Kress & van Leeuwen, 1996; Kress, 2009) concerned with shaping social futures through pedagogies of multimodal multiliteracies (Jewitt & Kress, 2003, Bezemer & Kress, 2015). Over time, this has been extended and been redirected still with reference to sociocultural approaches to learning (e.g. Vossoughi & Gutiérrez, 2016) and ultimately learner's agency (Lewis, et al., 2020) and productive expressions in an out of formal learning settings and practices as part of identities and 'learning lives' (Erstad, & Sefton-Green, 2013; Erstad, et al., 2016).

In these developments literacy has been recast as plural, that is as literacies (Kalantzis & Cope, 2012) with linked work under the spread of multimodality albeit with predominance of words and critiques as to logocentric and language framed framings of multiliteracies (Cope & Kalantzis, 2009) and multimodal multiliteracies as

their 'composition' (Morrison, 2010). Shifts to digitally mediated communication, with the notion of electracy (Ulmer, 2003) and developed and applied in contexts of narratives of post-colonial hypertextual learning (Morrison, 2003), was labelled *Literacy in the New Media Age* (Kress, 2003) and elaborated in *Multiliteracies for a Digital Age* (Selber, 2004). Such views were taken further in relations of new media and claims for 'new' learning (e.g. Cope & Kalantzis, 2010) and digital literacies (Goodfellow, 2011, Summey, 2013).

These occurred via platforms, tools and distributed cognition linked with wider techno-driven and projected claims for improved digitally mediated education in the burgeoning e-learning sector and claims to brighter futures without attention to contradictions, for example, of global access (see e.g. Facer & Selwyn, 2021). Chaka (2019) reminds us that literacies are socio-semiotically realised and that multiple modes of mediation and engagement are involved in their pedagogies. Literacies have been elaborated as beyond attention to words and even images and 'visual literacy' (Elkins, 2010), emphasising embodied modes of communicating, learning and knowing, that has been widely taken up for example in interaction design research. In educational literatures, for example, Leander and Boldt (2013) offer a re-reading of 'A Pedagogy of Multiliteracies' by the New London Group and place weight on perspectives from Deleuze and Guattari in discussing the role of bodies as well as texts in modes of emergent knowing [→ SEE FEATURES 1 & 2].

These citations point to that Literacies are plural and they are increasingly being redefined and repositioned in regards to knowledge and disciplinary domain areas such as financial and environmental and ecological literacies. Literacies are taught and studied as spatial (Leander & Sheehy, 2004) and in terms of design education as nomadic, ecological and sustainable (Snaddon, et al., 2017; Snaddon, et al., 2019). In 'Taking data literacy to the streets: Critical pedagogy in the public sphere', Markham (2020) highlights that our modes of making knowledge are both situational and publicly performative. Attention continues to be given to young people's active engagement in matters of change and futures, such as outlined in Gutiérrez et al. (2019). In summary, literacies as plural are increasingly seen as linked to global concerns for change in which diversity, difference and inclusion are also central (e.g. Tierney, et al., 2021).

Design literacies

Focus on design literacies has come to the fore in recent years and is connected to focus on understanding pedagogies of design and design education more broadly in which critical innovation is central (e.g. Nielsen et al., 2019, Nielsen et al., 2021). This refers to looking beyond advantages for business in response to the U.N.'s Sustainable Development Goals (SDGs) and also needs to place attention on social development and matters of environmental protection (Lutnæs, 2021: 2). This work by colleagues at OsloMet University is located in design education that mainly covers school design learning, craft, sustainability and product design and this diverse portfolio also makes it possible to develop a transdisciplinary discussion on design literacy.

In 'Framing the concept of design literacy for a general public', Lutnæs (2021) motivates for connecting design education to educating a general public on sustainable

PoliMi PhD Thinkaton: 2020

TEACHER: Manuela Celi

STUDENTS: Francesco Vergani, Haley Fitzpatrick, Mariana Quintero, Mila Stepanovic, Yue Zou

TAGS: Communication. Humans and Non-humans. Artifacts. Relationship.

Artorix

Artorix is the resulting provotype created for the 2020 PhD Thinkaton. A rough physical prototype and a design fiction video was presented to outline the conclusions to the following statement: The search for methods for interactive communication and mutual understanding between humans and

non-human species through artifacts. In a scenario where humans and non-humans may communicate through chemical inputs that are converted into feelings, this artifact's purpose is to create a single assemblage of beings, avoiding language constraints and uncovering relationships and conversations.



consumption and production so as to offset current and coming environmental challenges. In a sense, this is akin to Miller's work on futures literacy, it also being a stance to future proofing or preparatory protection against rising tides, ecological disaster clusters and modes of understanding complexity in an anticipatory view. However, Lutnæs (2021: 1) adds a specific design focus and argues that:

Educating the general public to be design literate can be a catalyst for both environmental protection and degradation, human aid and human-made disasters depending on how the 'design literacy' is defined and how the scope of design is framed. It makes a vast difference whether students are asked to design beautiful products to increase sales or to design useful and lasting products or services that improve quality of life and mitigate pollution.

Drawing on a literature review cast as storylines, Lutnæs (2021: 4) further examines three texts. The first by Nielsen and Brænne (2013) examines 'Design literacy for longer-lasting products' in which attention is given to design literacy amongst others and is connected to material knowledge, ecological literacy and citizenship. (Readers may notice similar themes in the sections above). In the second text, Greene (2014) examines transformational design literacies through children's place-making in building a new school garden. In the third text, 'Understanding design literacy in middle-school education', Christensen, et al. (2019) examined students' responses and designerly stances to inquiry.

From these studies, Lutnæs (2021) maps out descriptors of key concepts. She then identifies four core narratives in seeking to arrive at more sustainable futures concerning design literacies These are: a) Awareness through making, b) Empower for change and citizen participation c) Address complexity of real-world problems' and d) Participate in design processes.

In conclusion, Lutnæs asks what it means to be design literate. This she locates with regard to critical innovation. In 'Drawing on the four generative narratives ... and ideas of participation and transformation embedded in the concept of literacy' Lutnæs (2021: 10) suggests that:

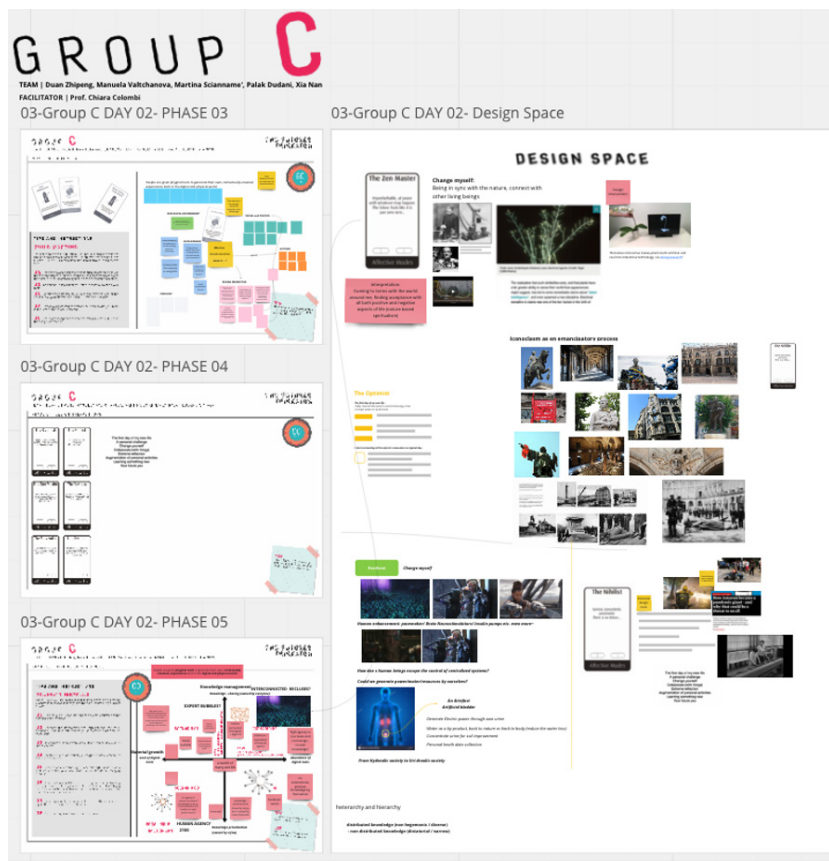
Being design literate in a context of critical innovation means to be aware of both positive and negative impacts of design on people and the planet, approaching real-world problems as complex, voicing change through design processes, and judging the viability of any design ideas in terms of how they support a transition towards more sustainable ways of living.

In the coda that closes her text, Lutnæs (2021: 10) elaborates on the implications for such a view and we quote this extensively as it aligns closely with our own perspectives in FUEL4DESIGN and directs us to consider the wider societal links and uptake of such initiatives and design education:

In a context of critical innovation, a core part of the teacher's role would be to draw the students' attention to how any design idea would satisfy real-world problems responsibly and towards a better tomorrow. Students need to recognise their capacity to transform unsustainable design practices as informed consumers and to challenge established regimes of policy, fundamentally rethinking definitions of human needs and desires (United Nations Environment Program, 2011). Only a few of a student cohort will become professional designers, but all of them are users of professional designers' innovations in their everyday living and as future employees. In support of critical innovation, the value of cultivating design literacy amongst a general public is empowering a critical mass of users who recognise their capacity to transform unsustainable patterns of living by the products and services they voice and opt for as consumers, democratic participants, and employees.

Readers will no doubt be thinking about their own notions and practices of design literacies. These act and intersect between design disciplines and domains, methods and making. Design literacies are not separate, but rather transmodal and relational: they are visual, verbal, kinetic, spatial, embodied, technological, systemic, interactional, experiential and anticipatory [Figure 4]. Each of these has sub-sets of specific skills, competencies, tools and techniques, as for example, suggested in the title of a recent article 'Game design literacy as a problem-solving disposition' (Kim & Bastani, 2018).

The developmental learning and proficiency that emerges through practice and critique is also a part of the building of design expertise and professional and research 'qualification'. Lerner (2018), for example, makes the connection between building visual and spatial aspects of art and design literacy as a prelude to aesthetic sensibility (see



◀ **Figure 4**
An example of group work using the Futures Design Toolkit in the PhD Futures Thinakton 2021, PoliMI. Reflection mode, Day 2, connecting tools (left) to elaborations in the design space (right). (FUEL4DESIGN, 2021). (Image credit: Design PoliMI).

Futures-oriented literacies and dispositions

EXCERPT FROM:

Snaddon, B. (2020). *Learning for Future Knowing Now: Investigating transformative pedagogic processes within a design faculty in a South African university of technology*. PhD thesis. Oslo: AHO. Available: [Link](#) ↗

I include here some reflections on a PhD study carried out between 2016–2020 where the focus was on the need to shape design curricular and pedagogical activities to meet future work and professional practice as well as the burgeoning fields of design for sustainability and social innovation in an unsustainable and volatile world. The study, located in a South African university of technology (UoT) environment, was an inquiry into how to work within complex settings such as designing for developing world issues in contexts of heightened socioeconomic and political inequality, and the changing demands and needs of clients, communities and policy, to mention a few. In shaping and connecting suitable and productive relations between design practice and design pedagogy, this study investigated currently ill-defined literacies and learning that might be appropriate for these domains of design and their emergent impact. As such, this thesis brought to the fore the ‘relearning’ taking place in a South African UoT through experimental pedagogy at the crossroads of design, sociocultural

learning theory, and critical posthuman perspectives for long-term sustainable futures.

Focus

The key research question addressed in this study was:

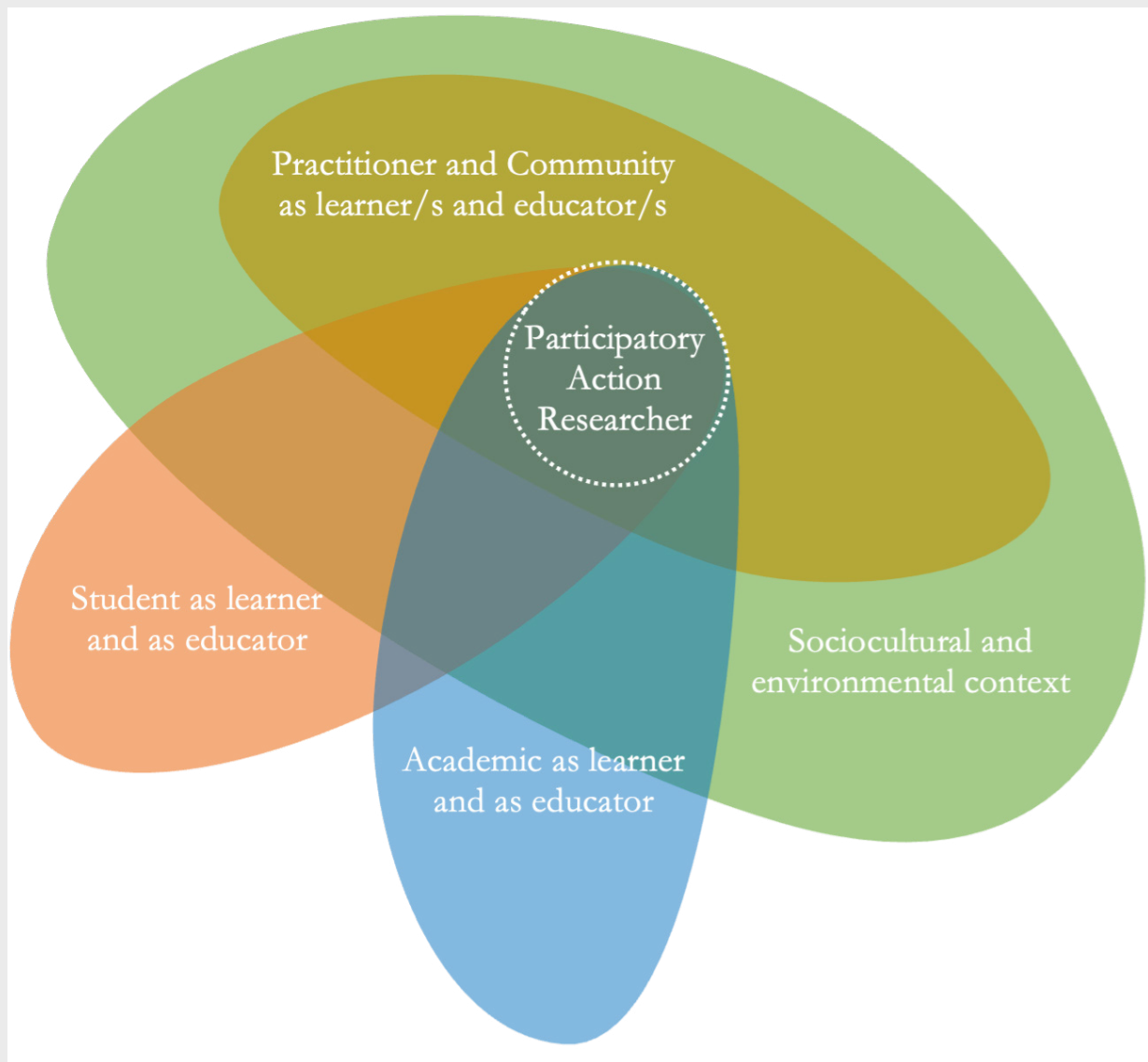
How might current design pedagogy transition toward emerging and complex contexts through curricular experimentation that is oriented towards sustainable futures by design?

The study was conducted as participatory action research and was practice-based with a focus on a participatory mode of pedagogical praxis. Importantly, this methodology addressed the need for educators to expand and critique their current practice through practice-led research to develop their personal capacity to mentor and guide design students through the sticky conflicts and dilemmas inherent in designing for sustainability.

Consequently, the study comprised an inquiry into a range of design project-cases over five years that aimed to enhance learning practices, resources, and reflections as part of a wider pedagogical shift toward learning about sustainable design in the context of climate change.

Contributions

The main contribution of this study was a pedagogical framework that proposed a set of mutually reinforcing modalities and navigational principles for design education in a transitioning reorientation towards long-term sustainable design practice. In summary, these modalities are framed through a pedagogical praxis of diffracting-in-action and are characterised as modes of:



- 1) Moving nomadically towards pedagogically charged contexts and situations,
- 2) Creating conducive and generative learning spaces that allow for sustainable design practice to be experimented with and experienced,
- 3) Exploring performative making of things and meanings, bringing matters and ethical matterings into meaningful conversation with one another, and
- 4) Attending to the effects of difference as learning phenomena emerge.

This pedagogical framework requires a pedagogy of nomadism that is 'diffractively attentive' to hidden power dynamics and multiple agencies in real –

▲ Figure 1: The fluid positionality of the participatory action researcher is characterised by reciprocal processes co-produced through who and what is engaged with. Illustration: Bruce Snaddon, adapted from Taylor & Fransman (2004: 21).

world socio-ecological settings. By being diffractively attentive, I mean attentiveness towards generative intra-actions and emergent relational dynamics between multiple actors in context-sensitive project situations, where designerly agency is attributed to human and non-human actors. In this regard, diffracting as process relates to being attentive to anomalies, serendipity, and strange collisions arising through the pedagogical apparatus of nomadism. That is, pedagogical nomadism set in motion by design educators, and given momentum through ongoing intra-action

within ecologies for learning, can enable an unfolding of generative possibilities for redirected and long-term sustainable design practice.

These are literacies and dispositions that are currently ill-defined or missing in our curricula. During these explorations, our designerly ways of 'conversing with the materials of the situation' (Schön, 1992) have been pedagogically aligned with a sociocultural perspective on learning that is situated and experiential, recognising that the transformative capacity of learning identities is enacted in 'lived relations' to others (Yee, Raijmakers, & Ichikawa, 2019; Ellsworth, 2005).

In our project-case work, the varied settings and situations were what defined and demanded a particular range of design competencies in the student group. In this way, project outcomes were less prescriptive and targeted toward designed outcomes such as products or services. This allowed space for students to exercise alternative, more open and broader modes of learning that yielded dispositions that, in time, oriented students' emergent ecological and futures literacies.

Reflection on application of this study

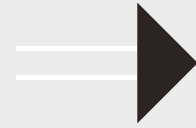
In the complex context of South Africa with its heightened socioeconomic and political inequality, and along with its increasingly fragile infrastructure there is a pressing need to interrogate and interrupt the historical present, and to empower capacity to provoke new relations.

One of the aims of the study was that it might resonate with and provide useful insights for designer-educator-researchers who are engaged in transitioning their pedagogy away from the dominant

market-driven paradigm that continues to inflect design education and practice. Personally, I am constantly reminded of the value that has emerged through my PhD studies as I work on new design course development with colleagues. Especially so while building a new Postgraduate Diploma and Masters in Design that will cater for a multidisciplinary intake of students from the fields of Industrial, Fashion, Visual Communication, Architecture, and Interior Design. As colleagues and I have developed this course with modules such as Social Innovation and Citizenship, Design for Sustainable Futures, Design Management, Digital Design and Making, I have been able to provide academic leadership during the conceptualisation and structuring of the course as a whole.

I am thankful for the highly invigorating experience of being a PhD candidate during the Fuel4Design project at AHO and to work with Prof. Andrew Morrison as my supervisor. In this time, I was lucky enough to attend several conferences in Norway that provided a valuable dissemination and testing ground for some of the work I was developing with colleagues. The opportunity that my studies gave me to inquire into our design pedagogy and the experimental nature of many of our projects over recent years has provided valuable insights and languaging capabilities to assist in the integration of these approaches into the course structure and our pedagogy. As we have collaborated and cocreated, we hope that we will have enabled a space for mutual entanglements, where exploratory and emergent possibilities might flourish for students and educators as they work together across disciplines, in multiple contexts and with diverse communities, and in-between the hybrid spaces of business, academia, government, civil society, political systems and the natural environment.

When launching our first module in late February 2023 I have been hugely encouraged by the highly articulate and questioning attitude of many of our students as they engage with challenging content to do with active citizenship and a designer's role in navigating, mapping and working with weak signals of positive change.



Questions such as: how can I engage as a designer and change maker in contexts that are so invested in maintaining the status quo? What of passion and intent as drivers of change processes and how does this support hope? Can control and top-down initiatives in times of crisis be a good thing? These are a mix of students, some fresh off our undergrad design courses and some who are well into their working careers. These are questions that bode well for a course that aims to engage students in the development of literacies and dispositions that are futuring, contextual and relevant to the turbulent world in which we all live in.



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Yee, J., Raijmakers, B. & Ichikawa, F. (2019). 'Transformative learning as impact in social innovation'. *Design and Culture*, 11(1): 109–132. [Link ↗](#).



e.g. [Figure 4]). Pacione (2010: 10) suggests that we have moved from an information age into a conceptual one in which design is the new literacy as it were, extending beyond skills of the 'master' (makes what is), to the 'virtuoso' (makes what is new). He writes that:

We are talking about basic skills in inquiry, evaluation, ideation, sketching, and prototyping. We are not talking about mastery of more specialised forms of knowledge that a graphic or industrial designer might employ, such as typography, colour theory, or CAD, but basic skills that are well within the full range of everyone's cognitive and kinesthetic capabilities and serve our everyday needs. (Pacione. 2010: 9).

What becomes pervasive, in Pacione's view, is the ability to innovate and to use generic competencies to make many things. To do this, he argues, we need to stamp out two things: that design is about how things look and that innovation is like turning on a light bulb. Abductively, Pacione sees the virtuous designer as expressing their competencies equally alongside reading, writing, arithmetic and analytical reasoning.

More recently at the LEARN X DESIGN 2021 conference, Maus (2021) explored critical design literacy competence and found that attention - not only to products and the how of action and environment but also on the whys of it - influence topics in reflection. What also matters is attention to the what of action revealed in connecting the hows and whys. In seeking to enhance critical literacy in design education, Bennett et al. (2021) position a view on working to facilitate just and equitable decolonised futures by way of shaping integrative design thinking and making and critical analysis. This they address where '...radical synergy functions as a nonlinear interplay of actors and activities within a multi-layered system, guided by historical consciousness of past wrongs and future visions for just and sustainable ways of life.' (Bennett et al., 2021: 339).

In summary, developments in literacies as plural can be understood as deictic (Leu, et al., 2017: 1), that is as developing and influenced by places, venues, locations and contexts of meaning making [→ SEE FEATURE 2]. This leads to a related question: 'How should we theorise the new literacies that will define our future, when literacy has become deictic?' Leu et al. (2017) argue that, with the Internet and Information Communication Technologies their field focus, this is tricky: contexts are themselves changing. What they see as needed is a 'lower case' approach to 'new literacies' that explores emerging and specific areas and not only higher-level aspects of what may be understood as more disciplinarily formalist New Literacies [→ SEE FEATURE 3].

Negotiating differences and commonalities

When engaging with 'new literacies', as educators we need to further explore meaningful ways to engage students in 'negotiating discourse differences' (Cope & Kalantzis, 2009: 166) [Figure 5]. This refers to widening design approaches that include the satisfaction of human needs, ensuring social equity, and respecting environmental limits. Such a move is to be understood as not only addressing the degradation of the biophysical environment but social and cultural environments too, akin to supporting stewardship for 'a balanced humankind in a balanced world' (Findeli, 2001: 14).

Negotiating such difference requires critical literacies concerning analysis, critique, and transformation of norms and practices governing designing in social and cultural fields of everyday life (Luke, 2012). Cope and Kalantzis (2009: 187) describe the micro dynamics of a pedagogy of multiliteracies as using a broader range of knowledge processes where ‘more powerful learning arises from weaving between different knowledge processes in an explicit and purposeful way’. We have seen how the emergence of behavioural dispositions for students in certain pedagogical situations have aligned with design literacies that can lead to ‘new capacities to act and create ecologically viable ways of living over time’ (Boehnert, 2018: Kindle location 1773).

Figure 5 ►
Together shaping
design futures
doctoral practice
based studies
and conceptual
relations. An
embodied
activity, part of
the BALLUSION PhD
Workshop, AHO,
autumn 2019. IOI
DESIGN FUTURES
LITERACIES,
FUEL4DESIGN.
(Image credit.
Palak Dudani).



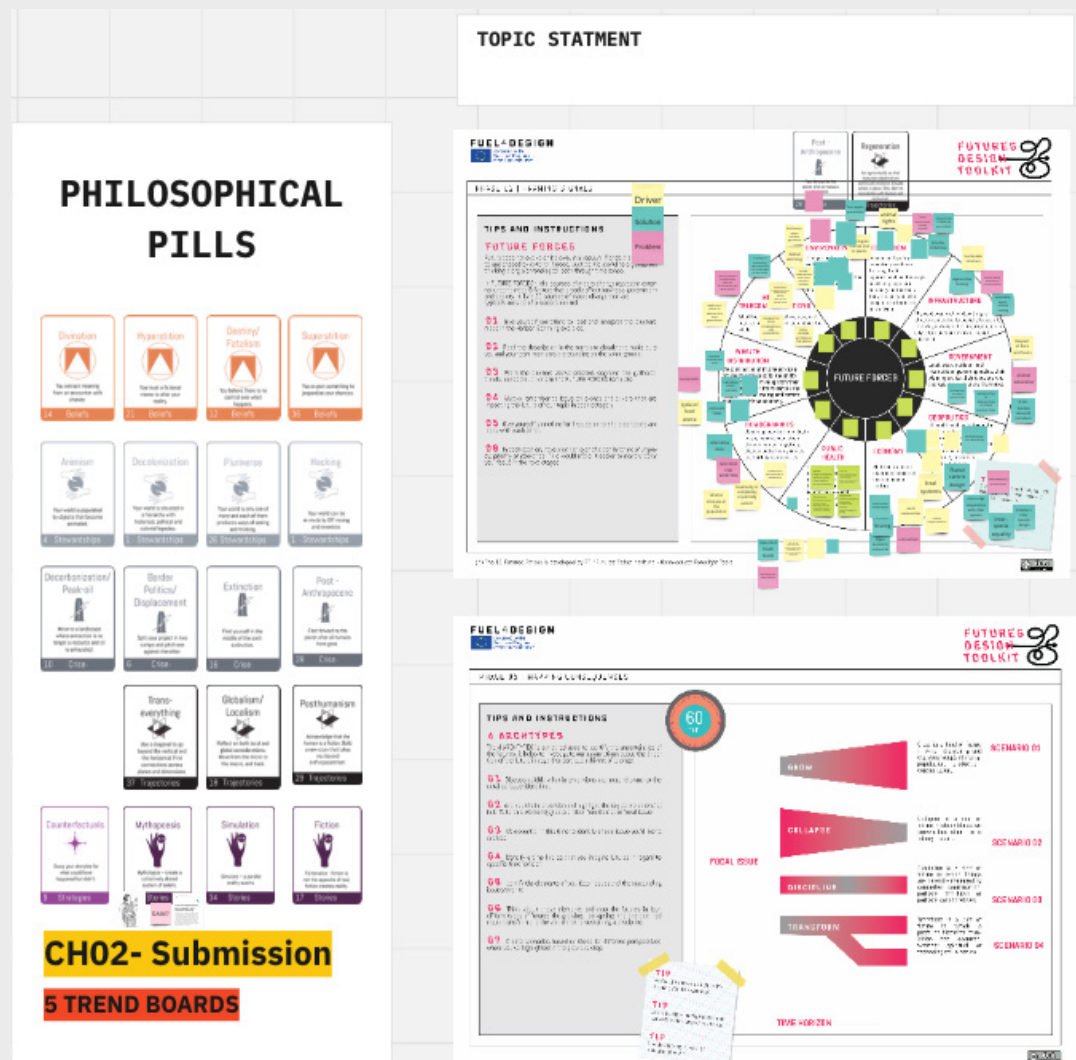
In a synthesis of plural views on design literacies and concerning stance in the thesis work in Snaddon (2020), we argue that the task of design pedagogy is to create learning conditions that can enable the following literacies through ‘context-sensitive collective intelligence process[es]’ (Miller, 2018: 16). These are ones that capacitate design students to navigate diversity through inventive futuring while enacting their emergent identity in relation to their lived experience and receptive to feedback within such navigation.

Such a synthesis aligns with the goal of a pedagogy of multiliteracies. Its aim is to support the growth of such a design student, ‘a person comfortable with themselves as well as being flexible enough to collaborate and negotiate with others who are different from themselves in order to forge a common interest’ (Cope & Kalantzis, 2009: 174).

WORKING WITH FUTURES FICTIONS

PROJECT:

PoliMI Futures Fictions (POFF, 2021). Focus on Philosophical Pills, Scenarios & Personas. Week 2, Group 4. IO4 Design Futures Toolkit, FUEL4DESIGN. (Image credit: Design, PoliMi)



Literacies are Plural and Performative

EXCERPT FROM:

Snaddon, B. (2020). *Learning for Future Knowing Now: Investigating transformative pedagogic processes within a design faculty in a South African university of technology*. PhD thesis. Oslo: AHO. [Link ↗](#)

Critical literacies

Critical literacy according to Luke (2012) refers to the analysis, critique, and transformation of norms and practices governing the social fields of everyday life through the use of technologies of print and other communication media. The point is made that issues of whose version of culture, history and everyday life count as official knowledge are ultimately questions of curriculum and pedagogy. These are questions concerning which ‘modes of information and cognitive scripts, which designs and genres, shall be deemed worth learning... [and] taught for what social and cultural purposes and interests’ (p. 5).

Contextual literacies

Erstad (2014: 10) cites the ‘reason for a new interest in these issues is partly because of the complexity of the social phenomena studied, which implies a need to include time-space relationships, an understanding of the importance of context, and how literacies and learning are framed within

space and time relationship’. He elaborates on studies of learning as either ‘learning in context’ within specific places like school, home etc., or secondly, ‘studies of “context in learning”, where knowledge gained from one context is studied as part of another Context’ (Erstad, 2014: 12). This refers to how knowledge gained from one context (i.e. the use of biomimicry methodology) is studied and applied as part of another context such as designing for sustainability.

Feedback literacies

Carless and Boud (2018) develop an argument “that through the development of feedback literacy, students are better positioned to use information to judge their own work and enhance their learning” (p. 1323). They advance four features of student feedback literacy: “appreciating feedback processes; developing capacities in making judgments; managing affect; and taking action to use feedback” (p. 1323). Feedback literacy is thus positioned as a core competency for the workplace and lifelong learning. This notion manifests as a key aspect in the project-cases in my study as students placed in these dynamic learning environments learnt how to respond quickly in a context-sensitive manner; to real-world feedback.

Multiliteracies

Debates around ‘new literacies’ have emerged around the critique of traditional literacy curriculum being taught to a singular standard and its redundancy in a world of everyday experience where meaning making is ‘increasingly one of negotiating discourse differences’ (Cope & Kalantzis, 2009: 166). The authors point out that the term ‘multiliteracies’ emerged from the work of the New London Group in 1996 to address the ever-broadening skills repertoire and, in pedagogic terms, an ‘active citizenship, centered on learners

as agents in their own knowledge processes, capable of contributing their own as well as negotiating the differences between one community and the next' (p. 179). The role of design education in preparing students for the world of work as active citizens comes to particular focus here when considering a) the pervasiveness of designed systems, artefacts and services, and b) the stance of designers as they create a design and the wider consequences that their endeavours may have.

Agentic literacies

A crucial point made by Cope and Kalantzis (2009) is that diversity is pivotal in today's world. Diversity is more profoundly pervasive than 'the straightforward demographic groupings that underwrote an earlier identity politics of gender, ethnicity, race and disability, which were the forms of politics that first unsettled the hoped-for homogeneity of mass society and the nation-state' (p. 173). When a widened scope for agency is allowed, however, space is opened up for the discovery of 'existing agency in the massively plural... in workplaces, markets, self-governing communities, amongst, between and within personalities' (p. 173). In such a move, the 'fabrications and falsifications of the command society with its one people, one state nationalism, its regime of mass production and uniform mass consumption' (p. 173) can be revealed and critiqued.

Design literacies

The ever-broadening skills repertoire mentioned above is taken further by Sheridan and Rowsell (2010: 112)

who challenge 'those designing literacy curriculum and pedagogy to cultivate the design literacies dispositions so that students are able to understand a greater range of choices and therefore are better able to be competent problem solvers for the 21st century'. Within the view of design's core definition as a problem-solving discipline (Cross, 2006) the notion of disposition in design literacy highlights the importance of stance and mindset, and what prefigures student designers as they work. (see Chapter 3)

Futures literacies

Miller (2018) gathers a body of work on his notion of futures literacy. His suggestion that 'the future does not exist in the present but anticipation does. The form the future takes in the present is anticipation' (p. 2) frames his argument that through the integration of the future into the present we are able to connect up theories and practices of anticipation to 'use-the-future'. This he describes as 'the foundation for defining and exploring the capability to 'use-the-future', for different reasons and in a variety of ways' (p. 2), which he calls futures literacy. Designing with the future in mind requires literacy that is enabling of imaginative, speculative and inventive modes of thinking and questioning so that the design 'fictions about the later-than-now and the frames...[designers] use to invent these imaginary futures' (p. 2) might be practiced more knowingly within design education settings.

Ecoliteracies

In her critique of biomimicry and its relatively recent arrival in the design field, Mathews (2011: 4) argues that if it is to play its promised revolutionary role of moving us closer to 'planetary ecological integrity', it needs to be strengthened in terms of various critical ambiguities that

could merely allow for its cooption into the prevalent anthropocentric mentality. Ceschin and Gaziulusoy (2019: 70) highlight Mathews' point that biomimicry will not 'create sustainability unless we act not only in imitation of nature but also from within nature, allowing nature to redesign not only our commodities but also our psycho-social patterns'. In light of design pedagogies being framed within the context of sustainable design futures, the concept of environmental literacy is key if literacies are 'tools for reading the lifeworld' (Hill, 2012: 43). Hill defines environmental literacy as being 'predicated on the belief that quality of life is linked to the quality of the environment, and that people must take responsibility to ensure that this linkage remains unbroken' (Ibid: 44).

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FUEL4DESIGN

E1 Anticipatory Actions

Connecting Design Futures Literacies with Anticipatory Learning Practices

PROGRAMME

29 November 2021

14:00 - 18:00 CET, Online

SESSION ONE - PREVIEWING

14:00 - 15:00

Plural Positionings

Welcome, Invited Talk & Discussion

SESSION TWO - BRIEFING

15:00 - 17:00

Parallel Translation Briefings

2 Briefing Sessions in 2 Tracks

SESSION THREE - CONNECTING

17:00 - 18:00

Anticipatory Effects: Discussion & Directions

Spatial Workshop on 3 Sets of Key Issues



On FUEL4DESIGN
<http://www.fuel4design.org>

*Future Education and Literacy for Designers (FUEL4DESIGN)
aims at developing knowledge, resources and methods
to help young designers designing for complex tomorrows.*



Boehnert (2013, 2018), in drawing attention to the term ‘ecological literacy’ developed by Orr in *Ecological Literacy* (1992), makes a clear and urgent argument for such literacy to be included in design education to ‘prioritise environmental and social sustainability’. Boehnert (2018) emphasises that ‘the ambitious aim of ecological literacy is to create the frame of mind that recognises the ecological and organises cultural, political, legal and economic priorities accordingly’ (Kindle location 1761).

Boehnert also acknowledges the difficulty of this as it is disruptive of educational cultures, and challenges many of the basic assumptions concerning design. She warns, however, that ‘institutions that ignore risks in order to cling onto ecologically destructive models of development and unsustainable design practices undermine their own legitimacy’ (Boehnert, 2013: 13).

Extending literacies: Skills, competencies and vibrancies

In sum, iteracies are plural, dynamic, procedural, performative and affective [→ SEE **FEATURE 4**]. In engaging productively and critically with design multiliteracies, Design still needs to pay attention to its specific and borrowed terminologies and to finding its own modes of written discourse and spatio-temporal address (Willis, 2013). This has been presented as a position, a stance, an activity and potential in which writing is seen as a designerly, purposive pursuit (Lockheart, et al., 2004).

For Melles and Lockheart (2012), referring to the work of the *Writing Purposefully in Art and Design Network (Writing-PAD)*, design writing is dynamic and its character needs to be located in its own (emerging) practice and not repeat ones reproduced in other disciplinary contexts but explore design literacies through making them. Lockheart (2018) accentuates that writing is a material practice for design students; it not one separated from their other means and modes of making and knowing but rather grows and needs to be articulated in multimodal communication in relation to them.

Alongside such emergent and dynamic aspects of design literacies, writing in design histories has also featured in the changing discourses within which design literacies and articulation of practice and critique are discoursed (e.g. Lees-Maffei, 2013). This is very much a matter of designing design education and plural views, experiences and pedagogies (IF Design foundation, 2021). Procedurally, design literacies have been cast as formal and technical skills but they have come to be realised via contextual, cultural and communicative competencies. In addition, they have taken on different character and agency, performatively, as articulations and expressions in terms of affect. They are embodied and imaginary, physical and virtual. They encompass awareness, empathy, and engagement and anticipation. They are also realised as social material practices in processes ranging from ideation to critical public reflection, as processes and artifacts, as prompts and heuristics, norms and novelty as we together learn how to learn to continue to shape these ways of knowing and sharing **[Figure 6]**.

We see that together this may assemble and resemble a design futures literacies-in-the-making as vibrancies. We take this up further in the next section.

Figure 6 ►
Shifting from embodied group play and critical positioning of concepts and perspectives in PhD thesis projects to individual noting of relations of terms and their situated application and potential in doctoral inquiry. Part of the BALLUSION PhD Workshop, AHO, autumn 2019. IO1 DESIGN FUTURES LITERACIES, FUEL4DESIGN. (Image credit. Palak Dudani).



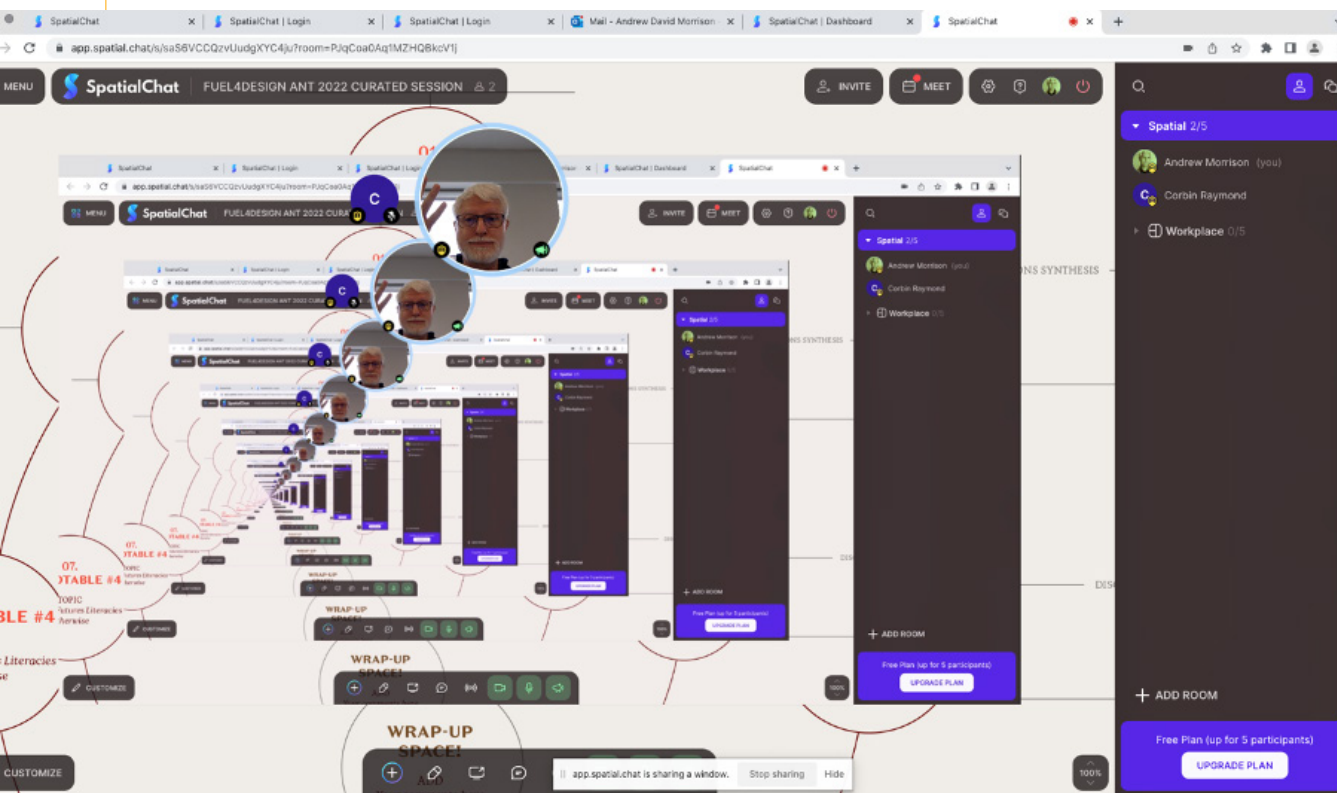
Orienting Design-Futures-Literacies

By Andrew Morrison

Working with shape-shifting

In this subsection we draw together the views and literatures on design, futures and literacies mentioned above under the umbrella term ‘Anticipatory Design’. This is elaborated in Volume 2, **Essay 1: Anticipatory Design Literacies** within a relational view on design and designing. The focus here is on workings of the hyphenation we have added in what we label ‘Design-Futures-Literacies’. This hyphenation is to do with overlaps, intersections, inter-relations and continuities, and while it is about proximities and contacts, it is also about distances and differences. In essence it is also about a mode of shape-shifting, in adapting while learning and making use of the serendipitous and the surprising, the rupture of glitches and the negotiations of alterations **[Figure 7]** as much as structured curricula and time management that includes students’ own learning processes within set parameters **[Figure 8]**.

What might this all mean, you may well wonder. Below we spell this out without attempting a formal binding declaration. This is not to be evasive but rather to offer contributions to the complex challenges and potentials for meaningful change before us as design students, teachers, professionals and researchers concerning the future



◀ **Figure 7**
Experimenting with SpatialChat hits a glitch and reminds us we are ourselves as teachers always needing to upgrade our own fluencies and work with tools that are not infallible. See the Final Chapter for more on uses of Spatial Chat. (Image credit: Andrew Morrison).

of design education together for futures *in* design education. We live and work in contexts undergoing rapid change and in recent years buffered by multiple demands and unexpected processes and outcomes.

Design education will always need to work with such unfolding change, and work to support learning that is responsible and flexibly creative in its responses and rejections and replacements with different, earlier or new inputs and practices. We will continue to need to unpack and understand different and preferred world views in design education and other domains and to understand their histories, struggles and limitations, along with their unfulfilled promises and intentions, as suggested by Mareis and Maim (2021). Equally, as van Helvert (2015) argues, we need to be mindful of the histories and materialisations of 'design ideology for the future'.

Through the open experimental character and practices of FUEL4DESIGN we have been working towards shaping a mode of 'Futures Design', much as is addressed in the book collection *Design and Futures* (Candy & Potter, 2019), or, as we call it Anticipatory Design. Similarly, de Smet and Janssens (2016) mention 'probing the futures by anticipative design acts'. This highlights the pragmatic with the performative, thereby connecting agency of human and nonhuman actors, organisations and infrastructures, together with the emergent and prospective directed not only to what next but to global well-being (Engler, 2017). Through such relational connectivity, design students become agents of futures-oriented change. This encapsulates and hopefully liberates design education in additional practices of care and equitable inclusion and socio-economic and environmental change.



Figure 8 ►
Master's in Design
for Emergent
Futures (ELISAVA,
IAAC), during the
second week of
the programme.
(Image credit: Fab
Lab Barcelona).

Futures ingredients still needed

Two recent publications provide helpful and far-reaching reviews of developments and initiatives in linking futures and literacies in the changing landscape of design education. The first seeks to build generative pathways between literacy discourses and futures studies and presents an interdisciplinary mapping of futures literacies as multiple (Horst & Gladwin 2022: 2). The second offers guiding principles for curriculum change in addressing re-imagined design education for the future. This work is based deeply in exploratory and critical visual design pedagogies, and proposes new plural futures for design education delinked from euro-centrism (Noel, 2023: 289).

These publications are a welcome addition to the literatures presented above on design, futures and literacies. They provide needed attention and openness to an ongoing synergy of disciplinary experience and practice and transdisciplinary thinking and prospects. They allow us to place work we have developed and reviewed, as the essays that follow embody, in relation to adjacent and associative thinking and views. However, the publications do not fully take up the relational, process philosophical and design tools and methods centred on the pedagogical perspectives we have adopted and explored, nor was it their intention. Yet, a relational and anticipatory design futures literacies view seeks to chart, connect and critically assess relations between selecting and enacting worldviews, vocabularies, modes of scouting and related dynamics of making, tools, mediation and affect.

Horst and Gladwin (2022: 6) present a conceptual map of futures literacies around the three core topics – (de)constructing futures, (dis)embodying futures and material futures. Onto and across this map, they link a diversity of domains, themes and approaches at a secondary level. Design is mentioned twice in this secondary level as design fiction and experiential design.

Further, design as part of multiple futures literacies is in effect only mapped under their main body text section on narrative and futures literacies, even though this is with reference to our own papers and early publications from FUEL4DESIGN. While offering an interdisciplinary review, this text is published within an education journal and naturally focuses primarily on links between futures and literacies, not design.

This view on futures literacies also highlights an ongoing need for design to more fully articulate its own positions and workings inside education journals and venues where in our view, there is a crucial and urgent need to address not only expanding notions of futures literacies as multiple and rich for dialogue. We also need to acknowledge the assumptions and practices that design futures literacies are subsumed within, or remain under articulated in, traditional disciplinary domain discourses, as well as those that reach for a more generative shared journey (see e.g. Fleischmann, 2022).

Writing this is not to dismiss the detailed and important mapping offered by Horst and Gladwin; it is to remind us that it is our task as design educators and researchers of design education to clarify and further discuss what it is that design brings to these dialogues and intersections and relations between design, futures and literacies [[→ SEE FEATURE 5](#)].

Such discussion is offered by Noel (2023) in her article ‘Designing new futures for design education’. She concludes that ‘The futures of design education will be pluriversal as we learn to co-exist with many ways of doing design that draw on personal histories, a range of identities, localities, and a diversity of motives.’ (Noel 2022: 289).

We take up such key issues and suggestions as part of opening out discussion and paths for Design Futures Literacies in the final chapter of this book entitled [Otherwisng Futures Design Learning](#) long within the related and extended essays in Volume 2.

Emerging thematics and changing design education

In addition to the recent publications on design education mentioned above, a body of design publications have appeared in the last decade about relations between power, design, participation, political economy and ecology. In design education these have been taken up in a rapidly expanding body of work outside concerns with given underlying world views and epistemologies on innovation and business, learning and skills, markets and consumption.

Alternatively, in a relational view on socio-technical and eco-cultural frames, and in contrast to other curriculum centred views, design inquiry and design education programmes and publications have increasingly taken up issues of point of view, 'representation' and design. These include feminist, decolonial, ecological and post-humanist perspectives, data-driven and AI-generative design situated concerns.

In response to such developments, next we point to very recent book publications as providing some of the scoping of changes in the relations between design, futures and literacies, both directly and indirectly. Here, design itself is struggling with changing contexts and responses to uncertainty, crisis and complexity that readers may not have all encountered, accessed or seen as necessarily related. We draw on this literature in the essays that follow, and attempt to pull them further forward in the final chapter to this book, while suggesting possible and potential directions for consideration.

We identify the following seven themes and summarise the books that offer design education key texts for further dialogue concerning both futures of and futures in design education [[→ SEE FEATURE 6](#)]. The themes are:

1) Crisis, emergency and action, 2) Culture and participation, 3) Speculative, ludic and mediational, 4) Sustainability, systems, things and ecologies, 5) Identity, decolonising and transformation, 6) Activism and political economies, and 7) Affect, interaction, automation and A.I.

Shaping Design-Futures-Literacies

By Andrew Morrison, Manuela Celi, Oscar Tomico & Betti Marenko

Orientations

In this section, we provide excerpts from three selected items from our open access publications ([Link ↗](#)) and present them in the format of FEATURES [[→ SEE FEATURES 7– 9](#)]. The first, a peer-reviewed conference paper, was published in a journal, entitled 'Anticipatory design and futures literacies' (Morrison, et al., 2021). The second is a blog post that points to a journal article (Diez, et al., 2020), in a special issue we curated. Third, we include an extended abstract for a curated session 'Towards shaping futures literacies by designing' (Morrison et al., 2022) at an international conference on anticipation where we reflected on the project in a performative presentational mode (see also the next chapter for further details).

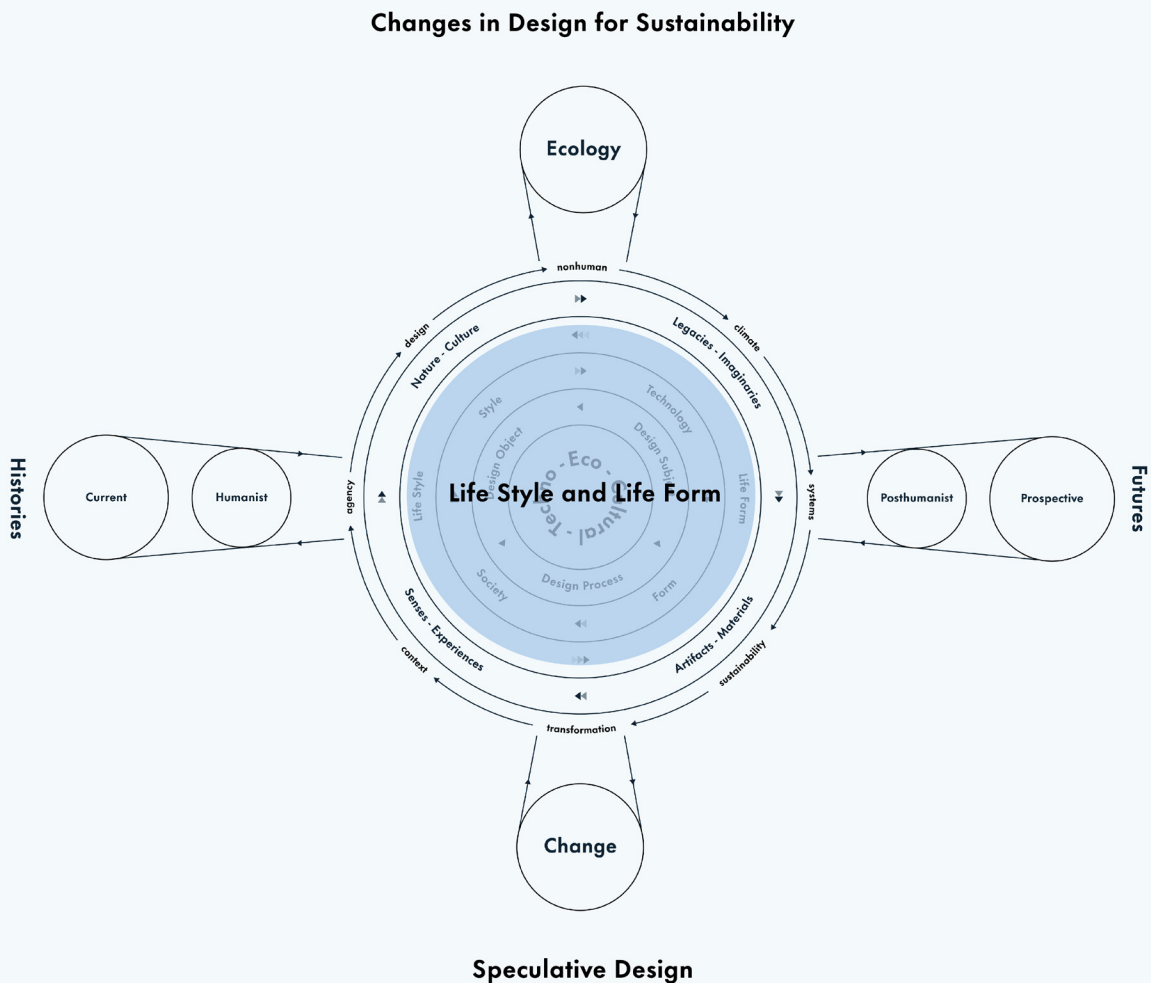
TOWARD DEVELOPING AN ECO-CULTURAL- TECHNO DESIGN SPECULATIVE APPROACH

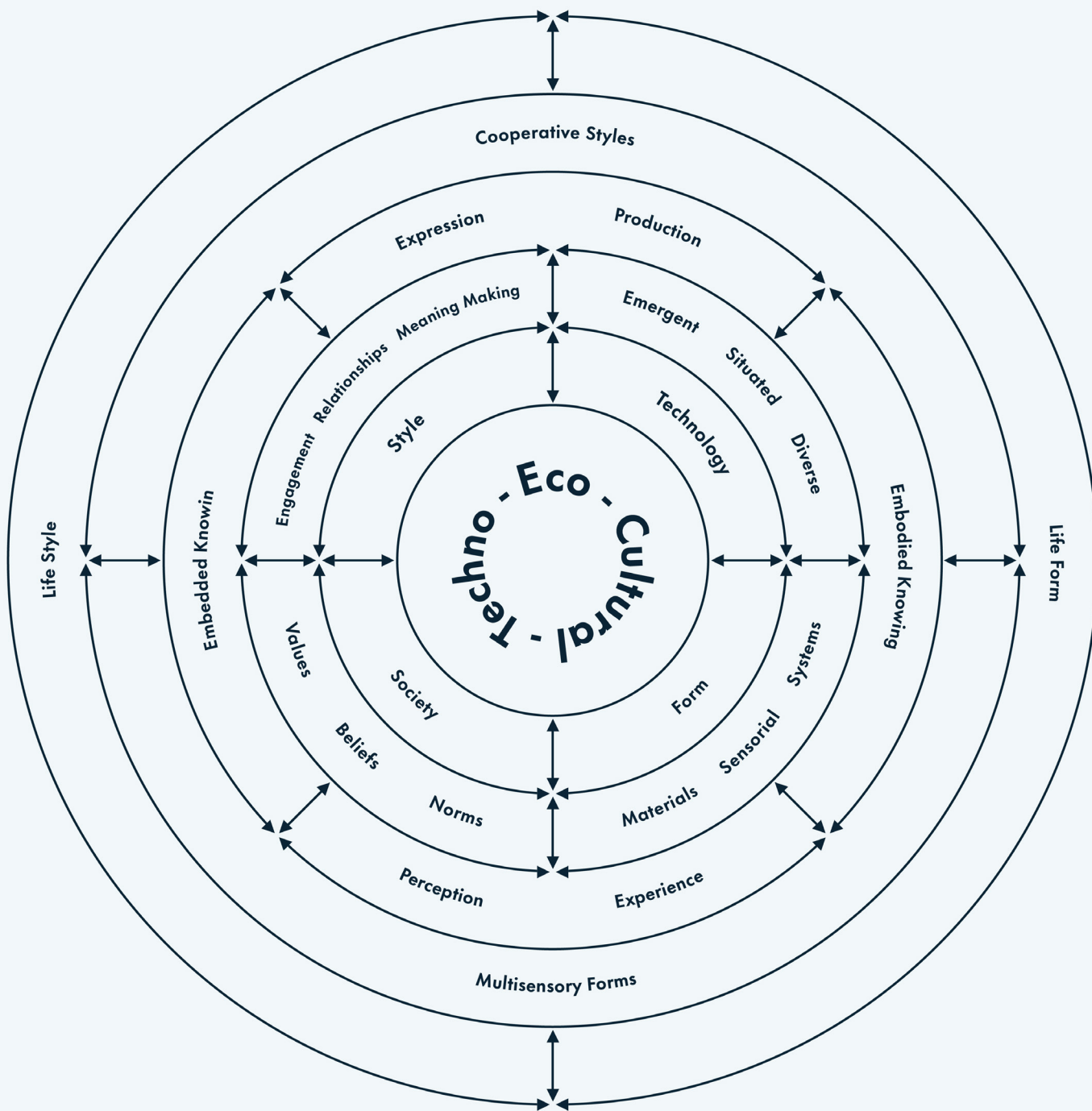
EXCERPTS FROM: PhD research by Yue Zou

PHD PROJECT: Zou, Y. (2023) *Learning for Future: Speculating on Design, Life Styles and Forms. Studies in the contexts of climate change and sustainability.* [Link](#)

SUPERVISORS: Prof Andrew Morrison & Prof Håkan Edeholt

In the Exegesis of my thesis by compilation, I have drawn up and discussed a theoretical transdisciplinary relational Eco-Cultural-Techno Design Speculative Approach, which addresses complex research dynamics through designing in climate change. First, I introduce the details of the Approach on its context and three intersecting views. Then, I outline the Approach through a schematic to summarise the key components of the Approach and show the dynamics and layers of the Approach. I discuss some key elements of the Approach to argue that the Approach has the potential to work with climate change and Anthropocene from Eco-Cultural-Techno views through design.





Emerging Thematics and Changing Design Education

BY Andrew Morrison

Crisis, emergency and action

The first theme that we see as emerging in publications in Design Studies that mentions and has a bearing on design education, concerns crisis, emergency and action. That design is itself in a mode of crisis within a changing world and in need of fresh philosophical takes and practices is covered by Fry and Nocek (2021). *Design Emergency: Building a better future* by Rawsthorn and Antonelli (2022) includes a historical essay on design emergencies, supported by a series of dialogues with key actors in developing and enacting responses and change.

A more specific educational focus is covered by Anastassakis and Martins (2022: 18) in their *Everyday Acts of Design: Learning in a time of emergency* who conclude that 'Designing would imply a strong commitment to the determination, in the present, of a future that would be characterised by a difference in relation to what already existed.

In other words, it would be the anticipation of futures by means of operations of replacement, improvement, reconfiguration, or innovation.'

Culture and participation

A second theme that is visible in recent publications covers matters of culture and participation.

Where earlier a focus has been on relations of anthropology and design pertaining to futures (Smith, et al., 2016), in the collection *Educating Citizen Designers in South Africa* Costandius and Botes (2018) motivate through a range of cases for democratic and participative roles and training for design students in context and for civic futures.

The role of communities and their agenda setting is also the focus of preferred and long-term futures centred around shared ethically framed community practices in *Design Justice* by Costanza-Chock (2020). DiSalvo (2022) takes up similar concerns in *Design as Democratic Inquiry* by arguing that such civics need to be experimental and translated into practice and action.

Drawing on earlier traditions on design and social innovation, not only business and technology centric approaches Amatullo, et al. (2022), offer global case studies that highlight the importance of design in enabling legitimacy in sustainability and participative social innovation.

Relations between design and agency are also taken up in explorations of views on identities, histories and practices (Potvin & Marchand, 2020; [see also Essay 4](#)).

Dialogue, inclusion and participation are reframed regarding the influence of interaction design language and discourse in locating the importance of participants not just 'users' to design processes and decision-making as the title *We Are Not Users: Dialogues, diversity, and design* by Subrahmanian, et al. (2020) indicates.

Speculative, ludic and mediational

Attention to the roles of the speculative, ludic and mediational is the third theme we identified.

These aspects of the what-if, play and communicative articulations are linked with growing attention to worlding in design futures and approaches to materialising cultural imaginaries for engagement and motivating change on the part of participants and learners.

Rosner (2020) addressed this in terms of methods and disciplines in *Critical Fabulations* and the book outcome of the ERASMUS+ project *speculative.edu* reflected on the emergence of design fiction and speculative design in shaping learning and futures (Mitrovic, 2021).

Such reflections have also been taken up in pragmatic terms in the *The Manual of Design Fiction* (Bleecker, et al., 2022). Relations between design futures and play are central to the work of McGonigal over the years.

This is manifested in her most recent book entitled *Imaginable: How to see the future coming and be ready for anything* (McGonigal, 2022) flavoured by claims to provide preparatory future proofing against impending and unforeseen disasters.

A further emergent development offers substance to the surprising lack of work on relations of media and design, and their extension to materialities and materials in *Vital Media: Making, design, and expression for humans and other materials* (Nitsche, 2022).

Sustainability, systems, things and ecologies

A fourth set of very much interrelated themes is that of sustainability, systems, things and ecologies and ways design is increasingly being taken up in changing practices and analyses around context and complexity, with huge implications for design education.

Design for Sustainability by Ceschin and Gaziulusoy (2020) is a key text in that it addresses a multi-level framework for locating and analysing the range of design-centred elements and processes ranging from artifacts to socio-technical systems.

A systems orientation is addressed in Sevaldson (2022) where designing complexity is the central theme in advancing a perspective on Systems Oriented Design (S.O.D.). It is located in design pedagogies and design praxis where giga-mapping and unpacking soft systems relations are the focus ([see also Essay 2](#)).

Such views on sustainability, ecology and systems, so central to the work of Papanek, is taken up by Chapman (2021) who tackles the central problematic of Design's seemingly endless production of good and services in the context of a deeply challenged planet, where gratification and designed obsolescence cancel out regenerative potential.

Related issues are taken up concerning design and ethics in the edited collection *Tricky Design* (Fischer & Gamman, 2020) so as 'to embrace, discuss and understand the ethical complexity all actors need to understand to adequately address the tricky challenges involved in creating the new times to come.' (Fischer & Gamman, 2020: 271).

The role of design in meeting such challenges in bio-ecological terms is the matter of 'a poetics of relating' in *Designing for Interdependence* (Ávila, 2022) that explores 'challenges and possibilities of conceiving design practices based on premises for cohabitation of human and other-than-human species' (Ávila, 2022: 1).

Identity, decolonising and transformation

Experiences, identities, voices and analyses that reject and disrupt assumed world views, eco-centrism and conservative norms that contribute to design's complicity in climate change and other contexts and challenges make up our fifth thematic that we bundle together as identity, decolonising and transformation.

Where ethnographic methods and positioning the identities and voices of designers, teachers, students, participants and researchers has influenced how design is conveyed and by whom, attention has also grown as to personal accounts and first person views (such as in our DESIGN FUTURES SCOUTING), conveyed in the edited collection *The Auto-Ethnographic Turn in Design* (Schouwenberg & Kaethler, 2021).

For Mareis and Maim (2021) the purpose of the collection *Design Struggles*. Intersecting histories, pedagogies and perspectives is to reimagine design beyond its euro-centric framings as an unfinished practice, infused and energised with situated, decolonial and queer-feminist views, voices and critiques.

In *The Design Politics of the Passport: Materiality, mobility, and dissent*, Keshavarz (2022) centres on related themes of design, politics and power relations, structures and practices in matters of identity, passage, identity construction and design bordering.

Long a champion of decolonising design curricula and design practices, in *Decolonizing Design: A cultural justice guidebook*, Tunstall (2023) lays down key aspects of what it means to engage actively, critically and productively in decolonising design. This includes: always placing Indigenous Peoples first, dismantling tech bias and the European modernist project, the making of amends concerning diversity, equity and inclusion, and the all-important reallocation of resources to effect decolonising design, as cultural justice, and in our design education practices and institutions.

Disruption, activism and political economies

These concerns all point to emerging discourses around a key aspect of 21st century design that has often been overwhelmed by functionalist and commercial concerns and forces, namely dissent and deviance.

Our sixth thematic set of works relates to the theme disruption, activism and political economies. That design has long been about altering given scenarios and challenging norms and is taken up in a critical retrospective reading of the work of Gui Bonsiepe in *The Disobedience of Design* by Penin (2021).

The emergent, serendipitous and ad hoc, as well as the illicit and controversial as central to design's cultural and political roles, is covered in Martin's (2022) book *Deviant Design*. Here, under-the-counter, unrecognised and deviant hacker practices are also seen in terms of design and ways it is appropriated outside commercial norms and constraints.

Similarly, in *Making Trouble: Design and material activism*, von Busch (2022)

motivates for ruptures and affirmative making in expanding designing, writing that 'It is my experience that every hands-on assignment also calls for courage. Even when you measure twice before the cut, it requires a daring mix of both calculations as well as happy naivete to finally carve into the material. Safe cynicism builds few new models of the worlds we need in the future.' Von Busch (2022: 24).

Wizinsky (2022: 1), in *Design after Capitalism: Transforming design today for an equitable tomorrow*, reminds us that 'Design alone cannot (and certainly does not) replace politics or economics or culture. Yet design is everywhere, and everywhere it is, it represents and enacts politics, economies, and cultures.'

He argues that design is plural, deep change takes time and we need to unpack how hyperobjects - following Morton, as being too complex large and distributed to fully sense and fathom critically yet are real - actually work and that non-design is also implied in postcapitalist buildings of alternate social futures.

Akin to this, von Busch and Palmås (2023) articulate a strong critique of norms of Scandinavian participatory and co-design in *The Corruption of Co-Design*. They argue that we need to jettison sentimental and ideal perspectives in favour of a hopeful realist naivité in a wider utopian realism.

These questions have been taken up in a different disciplinary and design frames: in promotional discourses of the 'circular economy' or principled arguments for degrowth, in *Designing Sustainability for All: The design of sustainable product-service systems applied to distributed economies* (Vezzoli, et al. 2021), and in projects and networks such as in the LeNS multisite/ country and networked pilot course.

Affect, interaction, automation & A.I.

Seventh, we see a theme arising around affect, interaction, automation and Artificial Intelligence (A.I.). Focus on settings and actors in their relations to product-service systems, is also apparent in the growing literature around embodiment, interaction and knowing (e.g. Barber, 2022) and the importance of paying attention to matters of situated, multimodal affect, in terms of design, senses, feelings and the experiential.

This extends to our relation to socio-technical or smart objects and matters of intelligence, agency and ecologies of making sense and sensibilities such as covered in the collection *Designing Smart Objects in Everyday Life* (Rozendaal, 2021). Interactions between humans, systems, technologies and ecologies may still be centred on human-computer relations (e.g. Kaiser, 2023), but these are now complicated by the weave of environmental and non-human actors in complex systems. This applies to the role of digital media and technologies, such as has been apparent in the pervasive uses of social media and the near dominance of a few digital tools and in our pandemic pedagogies the world over. Attention to platforms, to massive corporate interests such as the designed metamorphosis of Facebook's logics into their Metaverse platform. Simultaneously, the rapid reach of automation as part of post-industrial economies along with A.I., by techno-determinists and tech-detractors, has ushered in a new wave of socio-technical questions and affective educational debates about prospective work, learning and living (Coleman, 2019; Schneider, 2019, Crawford, 2021) in which 'the social robot' is declared as already designed to be here (e.g. Diana, 2021) and where 'A.I literacy' is already being debated (Bashir, 2022), such as in intense discussions around ChatGPT from late 2022 onwards.

Anticipatory design and futures literacies

EXCERPT FROM:

Morrison, A., Celi, M. Clèries, L. & Dudani, P. (2021). 'Anticipatory design and futures literacies: A need and a want.' In *Proceedings of CUMULUS ROME 2020*.

[Link ↗](#)

Anticipatory design and futures literacies

Attention to anticipation has been propelled by a recasting of the approaches of forecasting and foresight central to Futures Studies. Championed by Roberto Poli and in the related International Conference on Anticipation series, the notion of anticipation has developed from two primary directions. The first has been from systems perspectives (e.g. Poli, 2010) and the second from more culturally inflected views (e.g. Morrison, 2017). The approach has argued for an alternate space and means to address matters pertaining to expectations and aspirations, co-creativity and prospective inquiry in addressing, shaping and understanding futures connected with the present (Poli, 2014a; 2014b; Poli, 2015). Poli and Valerio (2019) have highlighted the importance of agency in shaping futures, though their focus is not from within design and anticipatory knowledge making but systems theory frames. Design has emerged in the past three decades in particular as a diverse,

rich mix of methods and tools, theories and concepts. The large, heterogeneous and transdisciplinary body of research in design also needs to be accessed in a changing, anticipatory informed Futures Studies we argue (Snaddon, et al. 2019; Morrison et al., 2020).

Recently, in its pedagogy and its research, Design has sought to address futures as cultural (Appadurai, 2013), participative and realised via prospective iterative inquiry located in shaping sustainable and survivable futures. This propels us into the complexities of systems, participants and stakeholders, non/human agency, interests, identities and cultural dynamics. Together the making and analysis of design futures need care-ful attention (Vaughan, 2019). This entails perceptive, imaginary thinking and design-ing (Lury, 2018), the latter about attention to the dynamic practices and reflections of making and shaping futures. We argue further that this is a matter of 'urgent design' (Morrison, 2019).

Design education is one domain that is future facing; it needs to face-up to working with uncertainty. Here, there is no 'future proof' solution but a set of anticipatory skills and attitudes that we should encourage students to develop. As with creative processes, the ability to anticipate also needs to be trained. This includes keeping an open mind, recognising cultural biases, imagining contexts where concrete solutions may occur, while always mindful of possible engagement, influences and impacts along with connected responsibilities.

Design education thus garners a mix of domains and approaches in a layered and linked curriculum that is increasingly informed by numerous other disciplines and practices as it works within and between them. If we follow the formulation



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Anticipatory Design and Futures Literacies: A Need and a Hope

of anticipation being about caring ahead of time, we are able to invigorate the term through design with the temporal, the spatial and the performative.

Further, we suggest the term allows design to access and appoint anticipation to design as making and shaping futures, a reflexive mode of 'becoming-in-the making' as it were. In short, this is about not merely an adjectival antecedent to design or a dismissal of other domains and views. It allows us to engage more fully with devices and tools from Futures Studies such as Voros' (2003) generic foresight process framework and access Celi's notions and framings of Advanced Design that are concerned with long-term perspectives and ongoing innovation. This may be in the uptake of design fiction (Celi & Formia, 2015), regarding aesthetics (Celi & Formia, 2017) or with respect to politics, publics and design co-creativity (Mazé, 2019).

Taken together these aspects amount to what Zamenopoulos and Alexiou (2007) labelled 'an anticipatory view of design'. By this they meant design is about both envisioning futures and working as a

catalyst for change. More recently, Celi and Morrison (2017) mapped differences and overlaps between Futures Studies and Design Studies in their contribution to the *Handbook of Anticipation*. They note that:

Design deploys prospective techniques such as sketching and prototyping to carry concepts, potential and possible directions further into development and distribution, thus making visible products, services and interactions that are embedded in designerly processes of abductive reframing. (Celi & Morrison, 2017: online)

Building on design's abductive, assemblage-like modes of inquiry, amongst others, design research and education have also been characterised as making and shaping anticipatory knowledge. This Celi and Colombi (2017) interpreted in relation to trends, as shifting between potential futures and concrete actions. Such views have been further framed in terms of the changing conditions and forces of the Anthropocene. Here Celi and Colombi (2019) address issues of design futures literacies as needing to build awareness.

Exploring Weak Signals to Design and Prototype for Emergent Futures

BY Oscar Tomico, Tomas Diez & Mariana Quintero

SOURCE: Blogpost, 30.04.2021. I03 DESIGN FUTURES SCOUTING. [Link](#)

Conference Paper

While technology and design have progressed greatly, they have also produced imbalances that affect the way we live and work. Additionally, they have also contributed to the use of the planet's resources to fill our homes with unnecessary devices and objects. We must de-objectify and de-colonise the way we design technologies to make for more inclusive and diverse futures. One way to do that is to recognise our shortcomings and experiment with them in a way that is productive and promotes a more peaceful coexistence among living systems.

Design for emergent futures

Design can give us the power to shape the environment and the imagination to create a desired future reality (Dunne and Raby 2013; Schultz 2015; Blythe 2014). However, one of the challenges for designers today is how to embrace non-linear strategies in a world of complexity and chaos. Designing emergent futures means de-objectifying

and de-colonising design to focus on designing interventions in the present from a 1st person perspective (Tomico, Winthagen, and Heist 2012) and to create new narratives about possible, desirable futures that we cannot anticipate – but which we can intimately play with and learn from (Søndergaard and Koefoed 2018).

In order to exemplify this approach, we present and analyse a series of projects developed over the course of the Master's in Design for Emergent Futures (Diez and Tomico 2020). Through the lens of critical and speculative design and technological exploration, students expand the focus of their interests and acquire the skills to turn protests into prototypes (Malpass 2019) and ideas into actions, and by harnessing the potential of digital fabrication, artificial intelligence, synthetic biology and blockchain, students are able to scale up the impact of their actions to address systemic challenges of our current socio-economic paradigms (Hand et al. 2010). The program's focus is on the design of personal interventions in the real world (Desjardins and Wakkary 2016) in the form of products, platforms and other deployments based on present weak signals in order to explore new emergent futures.

The paper attached explores the concept and practice of identifying these shortcomings via the "Atlas of Weak Signals." The Atlas is a tool for combatting future challenges by actively creating opportunities for design interventions to dissolve the troubling problems of our times. In order to support this claim, we present and analyse a series of projects developed over the course of a master's program. Specific emphasis is placed on how the Atlas of Weak Signals was generated between students and faculty as a methodology to better understand the view of the world in which we live today from the one in which

we design from. The projects are mapped in relation to emerging trends in both local and global contexts and the interconnections between these trends as generators of design opportunities. To conclude, it presents the lessons we learned in the form of a toolkit so other design practitioners, researchers, teachers and students can generate their own methods and tools.

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KEYWORDS Emergent Futures, Weak Signals, Designing Interventions, Making Futures, Material Speculation, First Person Perspective.

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ABSTRACT While technology and design have progressed greatly, they have also produced imbalances that affect the way we live and work. Additionally, they have also contributed to the use of the planet's resources to fill our homes with unnecessary devices and objects. We must de-objectify and de-colonise the way we design technologies to make for more inclusive and diverse futures. One way to do that is to recognise our shortcomings and experiment with them in a way that is productive and promotes a more peaceful coexistence among living systems. This research explores the concept and practice of identifying these shortcomings via the "Atlas of Weak Signals". The Atlas is a tool for combatting future challenges by actively creating opportunities for design interventions to dissolve the troubling problems of our times. In order to support this claim, we present and analyse a series of projects developed over the course of a master's programme. Specific emphasis is placed on how the Atlas of Weak Signals was generated between students and faculty as a methodology to better understand the view of the world in which we live today from the one in which we design from. The projects are mapped in relation to emerging trends in both local and global contexts and the interconnections between these trends as generators of design opportunities. To conclude, we present the lessons we learned in the form of a toolkit so other design practitioners, researchers, teachers, and students can generate their own methods and tools.

Exploring Weak Signals to Design and Prototype for Emergent Futures



INTRODUCTION

Today, the biosphere, financial markets, family structures, and business models in product development -not forgetting society in general- are being challenged in one of the most important transition periods of human history. While the industrial revolution and its successive exponential leaps in science, technology, and production paradigms produced innumerable benefits to society, they also brought about a plethora of complex and interconnected problems (Srnicek and Williams 2016) that are challenging us to redefine the role of design and technology in society (Serra del Pino 2016). We find ourselves in a period of transition and convergence where climate change, social disenfranchisement, and the centralisation of wealth and power meet emergent production paradigms and technologies (Diez 2012), all of which are opening up endless opportunities to recalibrate the negative effects of human-centred activities on the planet (Bardzell, Bardzell, and Stolterman 2014). New forms of synthetic intelligence, advanced manufacturing, new material science, and globally connected systems, among others, are prompting us to create different outputs from the ones we already know, challenging us to design possible futures for life on this planet (Ramos, Bauwens, and Kostakis 2016), human and non-human (Wakkary et al. 2016), and create promising and viable emergent futures for humanity to thrive, not just survive (Latour and Porter 2018).

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PICTORIAL

70

T. DIEZ / O. TOMICO / M. QUINTERO

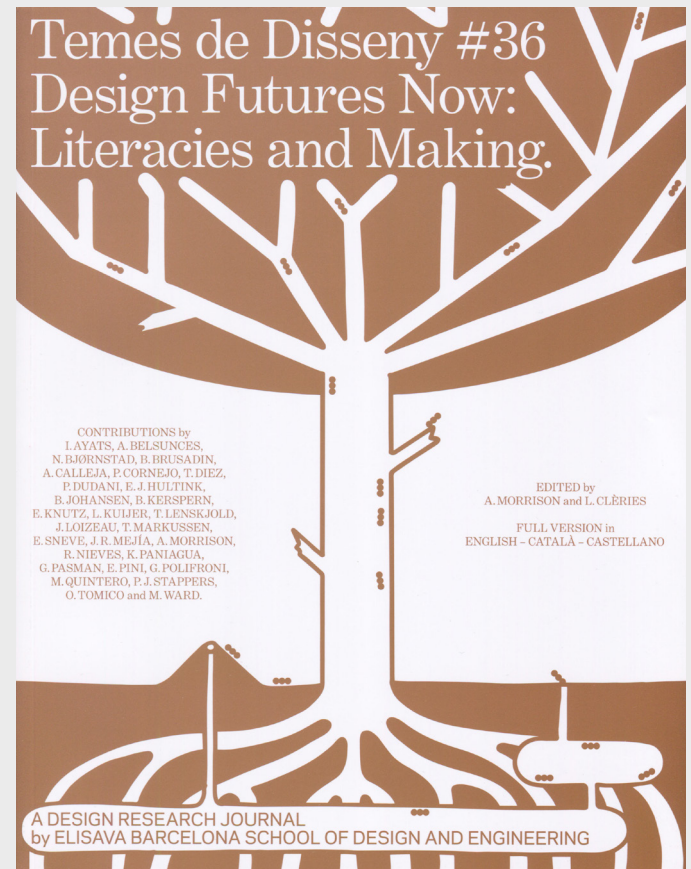
71

This paper was part of the special issue of *Temas de Disseny* #36, *Design Futures Now: Literacies and Making*. The issue presents the challenge of framing design's role in futures making through a series of contemporary scientific works. Design Futures is a discipline with its own literacies and making methodologies, and aims to address the world's complexity and phenomena by delivering options and opportunities for alternative presents.

▲ Figure 1: Cover pages of the pictorial 'Exploring Weak Signals to Design and Prototype for Emergent Futures'. By Tomas Diez, Oscar Tomico & Mariana Quintero. [Link](#) »

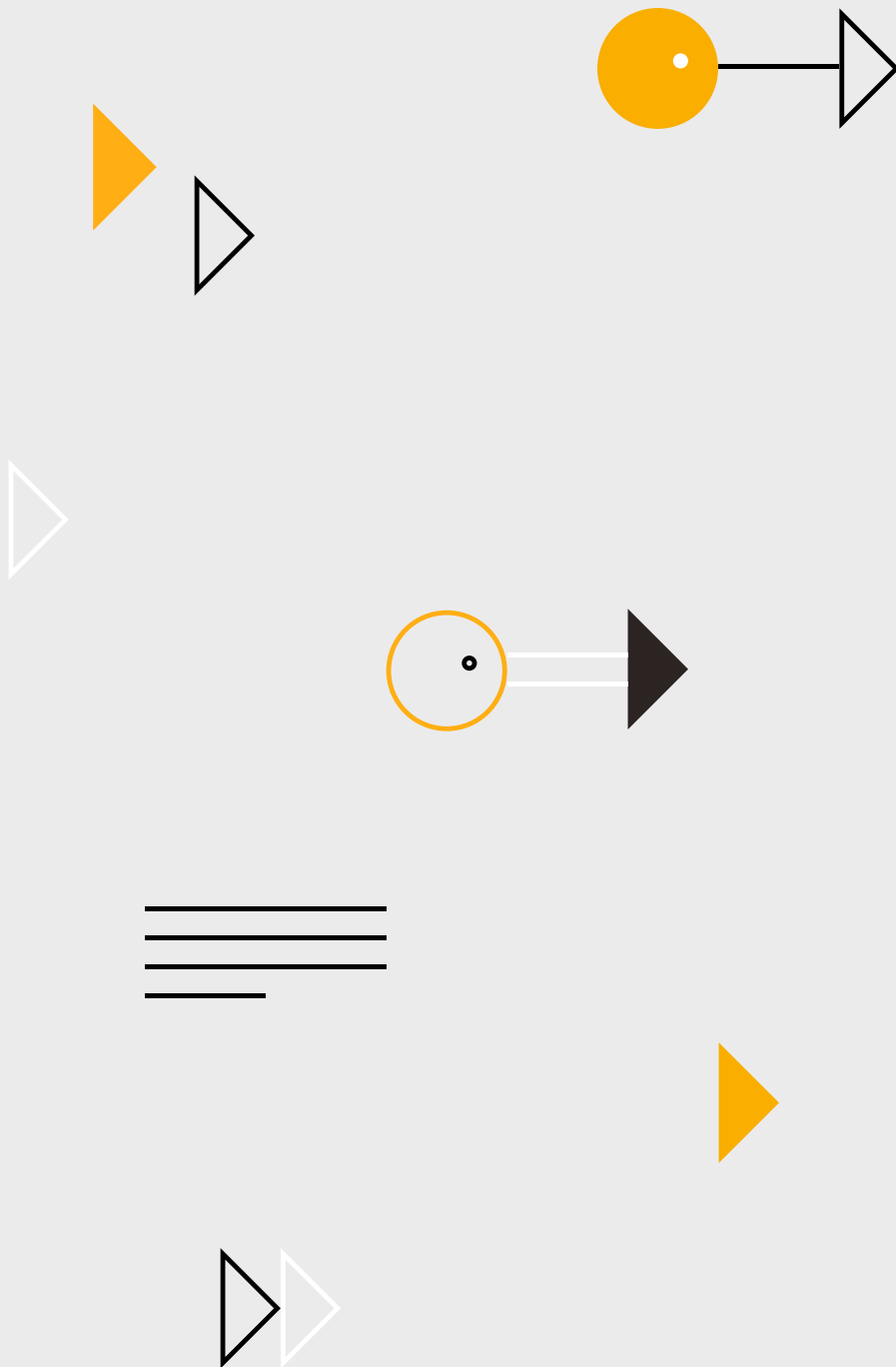
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You can explore the full issue here: [Link ↗](#).

▲ Figure 2: Cover of *Temes de Disseny #36, Design Futures Now: Literacies and Making*. Guest Editors: Andrew Morrison & Laura Clèries. [Link ↗](#).



Towards Shaping Futures Literacies by Designing

EXCERPTS FROM: Morrison A., Celi, M., Tomico, O. & Marenko, B. (2022). 'Towards shaping futures literacies by designing'. Curated session. *4th International Conference on Anticipation*. 4 November, virtual/ 16–18 November in place. Arizona State University, USA. [Link ↗](#)

In this curated session, we discuss a practice based pedagogical funded futures literacies project centred in four leading design universities in Europe. We do so to extend notions of futures literacy (Miller 2007) within an emerging frame of anticipatory learning and action (Inyatullah, 2006; Facer, 2011). This we present in the shift of anticipatory framings from futures literacy (with a futures view; Miller 2007, 2011, 2018) to futures literacies (located in critiques in the learning sciences, situated, agentic; Amsler & Facer, 2016; Gidley, 2016; Morrison et al., 2019) to design futures literacies (hybrid, multimodal, ecologies, designerly; e.g. Snaddon & Chisin, 2017; Snaddon et al., 2019, Morrison et al., 2021; Marenko, 2021).

Two recent elaborations on futures literacy both stop short of engaging with how creative-critical exploratory and risky acts of coming to know by making, through designing, ought to and may be part of shaping futures literacies. Poli (2021) has argued (with an underlying focus on science) that relations between elements

of futures literacies are intricate, and need to be futures located in a world as an unfinished process. He holds that '... authentic futures are embedded in dawning, unfolding events' (Poli 2021: 7) that need aspiration. Poli proposes a multi-part typology to pattern these for improved understanding, optimisation and action in different ways of being and becoming through building radical novelties in spaces in the present as a mode of anticipation to 'reopen' the future in the present through hope and action.

Facer and Sriprakash (2021), oriented towards education and anticipation, have characterised approaches to futures literacy as being beset by a move to codification centred on technical expertise, championed by UNESCO, and embodied in Miller's compendium *Transforming the Future: Anticipation in the 21st Century* (2018), around universal views on using the future to effect change in the present. Proposing a provincialisation of futures literacies to face power relations and struggles, Facer and Sriprakash motivate for a plurality of ways to bring the future into meaningful presents, to time and place, - reflexively, with curiosity and historicity, decolonising through alliances - and through a range of modes of knowing, ideas and positionings as students and teachers in changing organisations and institutions. With co-emergence and care for the future central, (Osberg 2010), it is through collective inquiry and co-emergence that ontological futural educational change may be realised (Facer & Sriprakash, 2021: 8).

In our work we have outlined ways design futures literacies may be situated, in mode of becoming and negotiating power, with a wider frame of anticipatory design (Zamenopoulos & Alexiou, 2007; Celi & Morrison 2017; Morrison et al., 2021). We conceptualise extending literacies and

futures relations, transdisciplinarily and methodologically, to include perspectives on multi-literacies (Cope & Kalantzis, 2015), multimodality (Morrison, 2010), multi-sitedness and digital living (e.g. Erstad 2015) and cultural plurality (Appadurai, 2013; Escobar, 2018) and diversity of design domains and practices. Taken together, we term these 'Design Futures Literacies' (Morrison et al., 2021)

In the session we will elaborate on what and how we understand these to be conceptually, pragmatically and pedagogically in the contexts and challenges of shaping futures education by design and design education through futuring (Candy & Potter, 2018). We have addressed this through the development and implementation of online learning resources in the FUEL4DESIGN (F4D) project in terms of design centred explorations and reflections on higher education masters and doctoral design students and educators involvement since September 2019, and mostly, due to the pivot to digital means, we have explored the uncertain, unfolding, changing and risky negotiations of productively and critically enacting design futures literacies online (Dudani & Morrison, 2020). Drawing on earlier situated pedagogies (studio, street, corporation, community etc) we frame these as dynamic, flexible, situated and emergent performatives made of intersecting 1) capacities and competencies, 2) fluencies and articulations, and 3) what we term 'vibrancies' or engaged, aspirational acts of emergent, situated knowing through design.

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Conclusions

By Andrew Morrison & Manuela Celi

Featuring Design-Futures-Literacies

Following these presentations, we close this current essay with a more fully elaborated visual schematic of our shared views and position on interconnected and dynamic Design-Futures-Literacies, rich in interconnection, and variety with difference in their experimental and exploratory development and potential.

As we approach a quarter of our 21st century of design education, it is clearly both under increased pressure to change as well as being a site of lively debate and activity on pedagogy, content, collaboration and research. In her introduction to Design as Learning, with the subtitle 'A school of schools reader', Sachetti (2018: 40) outlines:

... a much-needed shift in the field of design and design education is already underway. This shift appears in many shapes and colours, and opens several doors towards possible futures. It calls for greater responsibility and great agency. It demands with visibility and creates spaces for the opinions of others. It pushes design out of its silo and into the spaces where it connects with other disciplines. It insists on learning as a permanent, embodied attitude, one that transcends the formal, spatial and temporal boundaries of the school, and overflows into the world and life itself.

These reflections on shared sector needs and endeavours are not only the concern of the FUEL4DESIGN project and the four partner universities in Europe. In an editorial to a special issue of *Design and Technology Education* entitled 'Design education: Teaching in crisis', Jones and Lotz (2021) summarise eight main lessons from contributors to the collection of views.

These lessons are: 1) You can't just translate the 'surfaces' of one mode to another; 2) Who gets to speak - who takes part; 3) Connections, not proximities, matter regardless of mode of teaching; 4) Studio depends on habits of practice - but is also adaptable and changeable; 5) New words to describe and conceptualise in-between experiences; 6) New opportunities beyond 'normal' boundaries; 7) We all need support; and, 8) Making things visible.

This chapter has addressed many similar thematics. It has highlighted that design futures literacies are plural and performative. They are complex and enactive. Where they reach for clarity of design communication and expression that are equally fuzzy and formatively risky as they attempt to engage in very complex and changing contexts and conditions. While we have surveyed legacies, key contemporary presentations and characterisations of design education and its multiliteracies, FUEL4DESIGN has attempted to join design, futures and literacies where they are too often not discussed, entwined or explored pragmatically and creatively.

We believe that these are critically important for design education to both address as matters of the futures of design education and the roles of futures in design education. Learning to make and understand, analyse and communicate design futures is both an individual and group endeavour [Figures 10 & 11]. It will continue to demand our careful, critical uses of technology, negotiations and aspirations in collaboration. It matters that the futures, participants and experiences we design with and for become a significant part of living in and through futures in design as it changes with the world about us.



Figure 10 ►
An example of a contemplative moment for a student of the Master's in Design for Emergent Futures (ELISAVA, IAAC) using the Atlas of Weak Signals physical kit in the 'wild'. (Image credit: Fab Lab Barcelona).

As we have suggested, this is an intricate, delicate, complex and needed endeavour into which our professional design expertise and our education design and research capacities and activities must be made more active. This will demand some new thinking and movement. Concerning emerging and changing notions and practices of action and intervention, Hyland and Lewis (2022) reflect on the design studio and learning affected by the pandemic as needing to enter a mode of '(d)rifting'. In their view, '(D)rifting sets up a parallel, pataphysical dimension within yet beyond what is presently possible, occupying the infrastructure of learning so as to neutralise its powers. An educational alchemy is possible here that produces a different, posthuman and postdigital body.' (Hyland & Lewis (2022: 78).

We go as far as to suggest that what we have explored and offered through the project - by way of its online learning resources, events and this book - suggests that exploring plural futures pedagogies in, as, through and for design draws attention to many of the key matters facing engagement with changing ways of learning and knowing in higher education more broadly (Volume 2, [Essay 2 Altering Prospective Design Pedagogies](#)). This extends to worldviews on being and knowing also being framed and enacted as facilitating and respecting a diversity of ways of thinking, working and learning.



◀ **Figure 11**
An example of
Philosophical
Pills Workshop,
25 March 2020,
Central St Martins
(UAL), London.
Hybrid modes.
(Image credit:
James Bryant).

For Dean (2016: 26–27), it is through the invention of new boundaries and escape from inner and outer divisions that the freedom of design occurs:

This proliferation of design produces a provisional world without borders precisely through the multiplication of boundaries—a free-for-all in the most literal of senses—a situation in which design itself becomes free for all. Design is no longer the sole property of disciplines or professions, it is the medium within which everyone moves, interfaces, and chooses. Design is now public domain, appropriable by anyone. Indifferent to fields or levels of professional expertise, design provides opportunities for disciplinary commentary, prescribed inhabitation, and self-expression. Without dichotomies of inside or outside, the freedom to design occurs through the invention of new boundaries; liberty zones to rethink how we choose and designate new worlds.

In this chapter and the essays in Volume 2, we work with such thinking, but we also adopt a broadly relational view on design and designing in which futures perspectives are core.

We see such a relationally situated anticipatory design and design knowing view as one that seeks to take care, to generate critical creativity, to challenge and to contribute to the changing character and processes of becoming that constitute and change design education. A relational anticipatory design pedagogy is geared towards facilitating students and teachers to become resilient and regenerative designers and thinkers, and actors and agents. It is their actions, creative and analytical, that can, do, will and must transform design education and designerly futures – for and within and through

design. These performative acts are additionally important for they reach beyond given, comfortable and restrictive limits. They ask that we extend our ways of making, working, analysing and knowing beyond the boundaries of the design university and its commercial and public sector partners. We cannot but engage in wider, different and as yet perhaps unknown dialogues of transformation in policy and anticipatory change. This asks that we are more active participants in bringing design futures views to collaborative governance and to dynamic economic political arenas as well as to closely connected civic and societal knowledge generation and exchange.

This marks out that we will need to support our students to learn not only how to learn but also how to act and to engage in change processes that are driven and influenced by climates of instability and processes of emergent negotiative change. In short, anticipatory design has much to contribute to the projective discourses of the New European Bauhaus and wider calls for 21st literacies that cannot be technologically determinist nor technocratically-driven. FUEL4DESIGN offers a lively and open attempt to look into some of the tensions and possibilities for arriving 'elsewhere' together through modes of becoming together in new ways of making, reflecting, knowing and exchanging. These are issues that we take up in the next chapter, as well as in the extended essays in Volume 2.

Recently, Noel (2022) has addressed matters of looking to new futures for design education which are simultaneously about '21st century literacy skills' as shaping critical awareness through design. Significantly, in this view, non-eurocentric identity and expression are paramount in shifting frames and pedagogies of design, design education and design research. This has to do with a diversity of epistemologies and curricula that bring more specific focus to undoing colonising discourses and to the specifics of programmes that are built around more diverse cultural relevance and identity.

Key in continuing to reach beyond and from within emerging and stable 21st-century design futures literacies, then, is the need to acknowledge and practise a design educational ethos that allows us to articulate and deeply listen to and learn from and with a variety of voices, views, cultures and epistemologies. For Noel (2022: 289), 'The futures of design education will be pluriversal as we learn to co-exist with many ways of doing design that draw on personal histories, a range of identities, localities, and a diversity of motives.' And, we might suggest, the inclusion of hopeful, proactive and shared shaping and critiquing futures in such a plural and dynamic anticipatory design education that is sustainable, yet playful, edgy and challenging, care – 'ful' and sceptical, and altogether vibrant and invigorating.



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PART III.
ANTICIPATING




OTHERWISE FUTURES DESIGN LEARNING



BY Andrew Morrison, Betti Marenko, Palak Dudani, Oscar Tomico & Manuela Celi

WITH Silke Lange, Pras Gunsekera, Guim Espelt Estopà, Laura Clèries, Saúl Baeza, Corbin Raymond, Bastien Kerspern, Amanda Steggell, Jomy Joseph & Vlad Lyachov





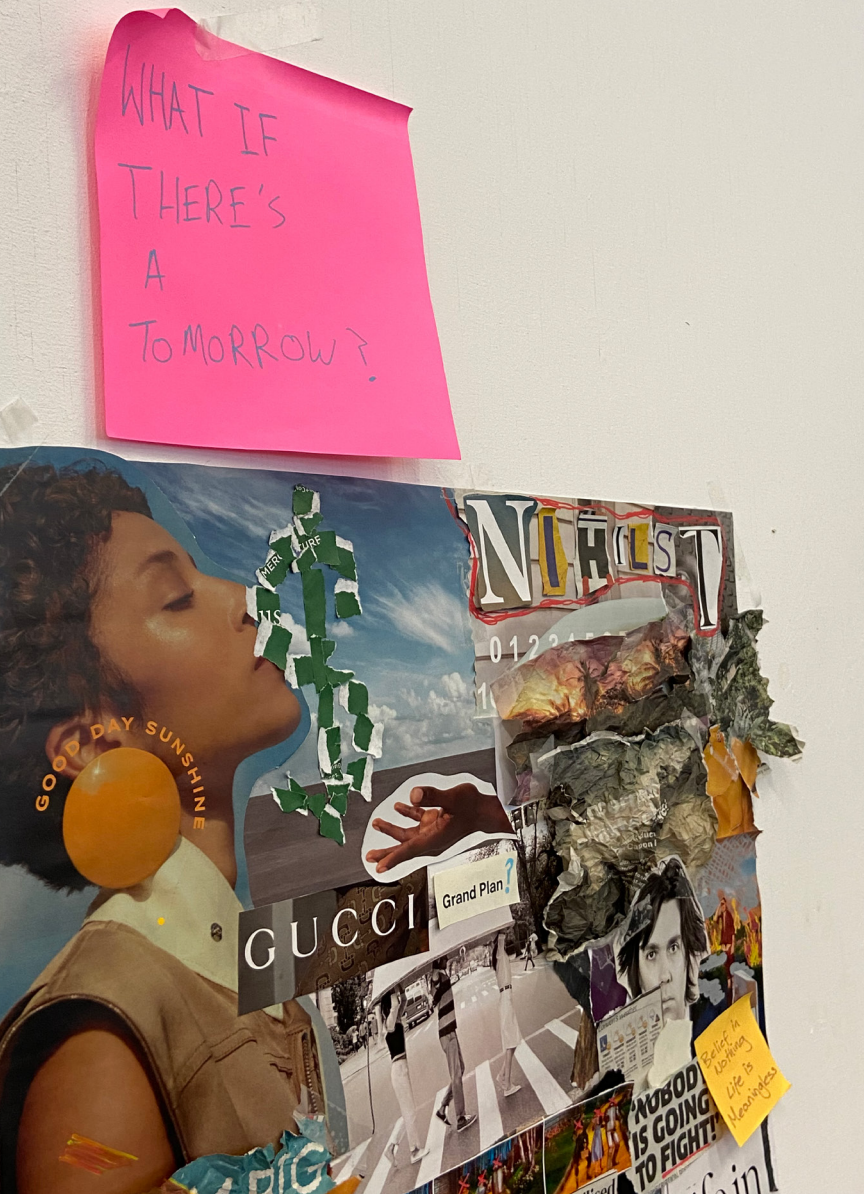
Introduction

Aspirations, projections and proleptic potentials

As each new study year begins and ends in design universities so too do the studies and careers of students of design. It is for these students that hopes are also primed and arise: these hopes are incipient and prospective, tentative and lean towards the possibilities of fulfilling futures. Yet, for design students, many of whom were born in the 21st century, design and planetary futures are deeply challenging. Environmental, ecological, geopolitical and employment futures seem increasingly uncertain and risky. Studying through the global pandemic and negotiating its consequences have highlighted the precarious nature of change for students of design.

In such contexts, clear expectations about life and work in design may even seem impossible to understand or aspire towards in the global context of climate change and species extinction in tumultuous times (Ghosh, 2016). So too might experiences in facing changing conditions and contexts as these feel distinctly uncomfortable and unstable in demands for repeated negotiation of life and work in the short and longer term as prevailing political economic systems contradict needed systemic ecological, institutional and human behaviour changes (e.g. Corvellec et al., 2021; Demos, 2020). In these settings, social and mass media link students with micro to systemic matters and issues in rapid, and at times disconnected, informational processes of access, distribution and dispersal. Further still, students of design are asked to engage with complex contemporary issues and their dynamic and emergent relations within what are communicated and encountered as compounded crises and emergencies to which design writers have turned (e.g. Rawsthorn & Antonelli, 2022). Added to this is recognition of design that is crafted in the ambit of more than human entities and the forces of self-propelling systems outside of human direct manipulation.

Yet we underscore students' agency in learning (Potvin & Marchand, 2020) and we try to galvanise them to engage in critical play to work through the changing dynamics of non-linear worldmaking while human actions to avert climate disaster seem increasingly difficult to achieve. What if there is a tomorrow? As shown [Figure 1], students are asked to engage in these matters and respond in a diversity of relational and communicative forms in working to shape responses and positions within which to design with futures as possibilities, likely destinations and troubling actions in the present.



◀ **Figure 1**
FUTURE
PHILOSOPHICAL
PILLS, Group
collage detail.
The 'Hacking
Futures – Futures
Hacking'
Philosophical
Pills workshop
at Central Saint
Martins, UAL, 7
February 2020.
(Image Credit:
James Bryant).

The FUEL4DESIGN project had a main goal of opening out issues and problematics, posing new thoughts and offering possible modes of making and reflecting to inform a future in design view for longer-term sustainability and a different, prospective design education. As Part II of this first volume illustrates, we have done this in a diversity of situated and exploratory ways through the project work packages. The ideas and activities we engaged in have been taken up in reflections on their genesis and applicability as well as being extended in Volume 2 in a weave of extended essays. In this current chapter, we draw together a diversity of ideas and examples indicative of how we have worked but also how we have engaged in a range of discussions and dialogues through events and the shaping of new tools and related communicative activities. Master's and doctoral design students have been the core audience but so too have design educator-researchers.

The chapter includes material on public events and processes and some of their limits and potentials in working to create lively, participative spaces and means to articulate collective, generic and domain-specific learning activities and processes in a mode of becoming rather than adherence to linear lines and repetitions of givens.

Some of the issues and problematics this chapter takes up are as follows, and by no means are they presented as a proleptic or predictive checklist or roadmap. Rather, readers are invited to use them as departure points, pivots and suggestions to think about and pose ones of their own, and with others, that return our anticipatory design ventures into literacies and pedagogies to the actual and contemporary world for concerted, critically creative action.

A number of questions have arisen over the project life and in its reflections, such as:

What might be taken up in re-configuring our design curricula to genuinely and generatively face such anticipatory challenges and to keep hope and critical creativity open and active?

How might risk, disruption, divergence and difference play out as learning and pedagogical resources in working with futures as a material in an anticipatory design education?

What might we re-frame and how might we do this through locating our modes and sites of knowing differently?

From and with which diverse knowledge systems and resources might we learn design otherwise?

What values and behaviours might we and must we highlight and include in a pluralist, anticipatory design education?

Which legacies, experiences and resources can be drawn together to articulate design futures literacies and pedagogies that counteract restrictive and containing predominant approaches in designerly learning?

How might we conceptualise and support learners' curiosity, difference, aspirations and dynamic making in and as anticipatory design practices to facilitate alternate presents?

What do we need to think and do to support wider resource generation for the materialisation of possible futures and their actual pursuit and enriching longevity?

Outline of chapter

This final chapter to *Design Futures Literacies* (Volume 1) takes up a range of issues and possible directions for further dialogue and application in our contexts of design futures teaching and learning. The chapter also works as a bridge to related themes that are elaborated further in the second volume.

In the next, second, section we take up framings and relations between the concepts and practices of otherwise and otherwising and include some indicative and tentative examples from the project. Sections three and four present and reflect on two major public events geared towards design educators and research students. These sections provide more fine-grained and dialogical communication of ways we worked in and across FUEL4DESIGN and, importantly, perspectives of invited speakers and participants

to large online sessions. We present considerable detail on these so as to motivate readers to look further into them in their online formats, including video that works to orient and to summarise key themes and aspects of the projects' engagement and outcomes. The first selected event entitled 'Decolonising Futures in Design Education' from 20121 realizes what we call a set of Deliberations. These refer to complete online video presentations and discussions along with summaries of participants' views. In a sense these also function as afterwords of a sort, or a take on scenarios for future world making by design (e.g. Vervoort, et al., 2015). The second event, 'Building Pedagogical Futures in the Present', was held in 2022. In terms of genre and format, this event took the shape of 'Dispatches' on how to imagine and design an otherwise. Through pre-prepared project and guest-generated video, poly-logical themes and exchanges were generated and reflected upon as building the means and venues for further ventures into shaping futures learning in design and through design.

Sections four to seven offer some of the extended ventures we have made during the project and the final year's work around the generation of material related to the mediational and communicative focus of the 'manual' in the final work package that has resulted in the projects two books. In section four we address matters of transcultural and transpositional philosophical and conceptual terminological extensions and possible futures directions of work developed in the first two work pages in FUEL4DESIGN. Such taxonomic and translational aspects are gathered under the genre of Assemblies.

In section five, this is taken into more ludic, performative, photographic and interview based mediations under the genre of Exhibitions. For section six the Diorama is a mode of presentation for further exploration of the roles of scenarios in diagramming and annotating reflection on contextual and collaborative futures learning, governance and societal change. In section seven, drawing on the genre of the Atlas, we travel further into possible, counterfactual and troubling matters of geopolitical and mediational encounters. This takes the shape of online, spatial collaborative narrative engagement and workshop supportive resources for situated re-direction and follow up.

The chapter closes with a short section pointing to the themes of volume 2 and towards a number of matters for possible and needed further discussion and engagement as we motivate design educators and students to work with expanded notions of literacies, world views and the shaping of long-term sustainable futures through design. Overall, we suggest that the chapter material, and the ones that inform, precede and support it, along with the elaborations in the essays in Volume 2 contribute to much needed debates and directions for richer, transversal and shared design otherwising.

'Futures design otherwising' as a wider knowledge-making, sharing and enacting project is itself in-the-making. It asks that we take up futures, temporality and pluriversality - amongst others as anticipatory design materials and processes - in ongoing modes of becoming through and with difference. These are emergent, generative, risky and exploratory design futures literacies where processes and participation continue to contribute to shaping design futures learning and pedagogies through and about designing.

From Otherwise to Otherwising

By Andrew Morrison & Betti Marenko

An/otherwise approach to design futures literacies

In the FUEL4DESIGN project and the two volumes arising from entitled Design Futures Literacies we have attempted to draw together aspects of practice and inquiry into a relational set and intersecting domains of making and knowing in emergent and prospectively critical processes of shaping design futures pedagogies. We have acknowledged that much is in place for continuing with design education into the 21st century that is informed by centuries of designing and decades of formal western design education endeavours. As with other colleagues and design educational institutions, our own design and teaching and learning is enriched but is also formed through what has preceded us and by that which prevails and predominates.

Our separate and collective work in the FUEL4DESIGN project, however, has taken place in sites and junctures of challenge and complexity. This is the case in terms of the meanings, methods, pedagogies and mediations of design as a multi-discipline that has always sought to work with the emergent and the new. The unfolding of novelty and the potential and, indeed, drive for change for a better world have been driven by modernist logics and world views influenced by ones from wider, dominant forces and practices and research from outside the design university. In such universities, research on, for, through and as design has developed in the past 50 years, as manifest in the content of the 50-year jubilee of the Design Research Society at the DRS 2016 Conference.

In the past decade scholarship on design has expanded enormously with a surge in conference publications and an 'expanded field' of design (Kraus, 1979). Evident are new configurations, alliances and critical perspectives on design's changing societal and ethical roles in decolonial, post-development and pluriversal configurations and articulations (Escobar, 2007; Fry & Nocek, 2021; Noel, 2022; Noel, et al., 2023; Tunstall, 2023). The issues and politics of design and its educational arrangement and enactment in preparing students for design in future making has increasingly been critiqued concerning matters of race, representativity and knowledge framing and methods (e.g. Berry et al., 2022; Akama, et al., 2019; Archibald et al., 2019; Tachine & Nocolazzo, (2022).

Matters of power, agency and transpositionality are beginning to be taken up in regard to relations between posthumanism, uncertainty, futures, design, technology and environment (e.g. Marenko, 2021), Service Design and public health and in views on Artificial Intelligence (A.I) and the Metaverse as market and technology determinist (e.g. Atanasoski. & Vora, 2019). These issues of design, politics, power and performativity are further marked concerning ongoing need to more fully elaborate principles and actions, transdisciplinarity and post-qualitative inquiry in counter-discourses [\[→ SEE FEATURE 1\]](#) around design ecologies and sustainability in the context of climate and environmental crisis and long-term global survival.

Beyond Vapourware

EXCERPTS FROM: Page 89–91 of Chapter 3, Beyond Vaporware: Remembering the Blue Reparations Programs in *The Open Journal of ReFuturing* (2131).

TITLE: Joseph, J. (2023). *Refuturing Studies: Rehumanizing futures through/by design*. Oslo: AH0.

SUPERVISORS: Prof. Håkan Edeholt (AH0) & Prof. Bodhisattva Chattopadhyay (Univ. of Oslo).

Biomineralisers

Symbio-metallurgical Devices for Biomining
Biominalisers become a means to refine rare earth minerals from their ores using biological processes of biomining and bioleaching. Biominalisers also apply these methods combining them with wastewater electrolysis for bioremediation of contaminated effluent

sites left behind after centuries of mineral exploitation. Together with biochemical processes of microbial growth, the bioactive carbon medium provides a proven, effective, and cheap means to clean up nitrates, phosphates, and heavy metals from freshwater ecosystems. The yield quantities are low but are in sync with the need for slow fabrication processes that have become the norm for producing many rare-earth-dependent high-tech goods. Certain strains of fungi and species of plant organisms known to biologically leach minerals from ores are applied here, working together with metabolic systems. In addition to copper and gold production, biomining can also be operated on local scales to refine elements such as cobalt, nickel, zinc, and uranium. Biomining has also been applied in processing sulphide and uranium ores, showing remarkable opportunities for remediating soils and water bodies.



BUILDING PEDAGOGICAL FUTURES IN THE PRESENT. Dispatches on how to imagine an otherwise.

A dialogic space to explore the transformative power of design education, underpinned by the intellectual outputs of the FUEL4Design project.



Photo: James Bryant, 2020.

Tuesday 7th June 2022, from 12:00 - 16:00 BST.
Location: Online (register via [eventbrite](#)).

ual: university
of the arts
london

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DESIGN AND ENGINEERING

 **Erasmus+**



Design may be becoming increasingly transdisciplinary in its responses to educating designers and design researchers. However, it has also been deeply challenged by wider interests and formations, such as the fossil fuel industry, to maintain the status quo, and a debilitating one at that, in the context of serious, urgent reduction of CO2 gases in order to meet a scientifically and UN-supported targeted goal of not breaching a 1,5 C rise in temperature. Our design views on futures, are thus never more acute in their need and in their demands to address such matters as part of our curricula. They challenge us to seriously engage in acts of unlearning, as Briggs (2021) argues in a call for rethinking relations between 'poetics, pandemics and the politics of knowledge'.

To unlearn in these contexts, as we address in **Essay 2: Altering Prospective Design Pedagogies** in Volume 2, is to engage design educators, researchers, students and partners in rethinking education for the future (Razquin & Ibarretxe, 2021) but by design. It entails exploring and exposing what limits and obscures our students and ourselves from rebooting design in the context of reconfiguring and decolonising design futures oriented specifically 21st century literacies.

These are design futures literacies that are that are informationally, culturally, contextually, ecologically and technologically rich and vibrant in their being design informed and manifestly situated and articulated by being and design in and of themselves. This design character is further positioned through its relational anticipatory pedagogies that are centred on the interplay of critique with activation while located ontologically in processes and activities of design futures learning as becoming. This too must include our critical reassessments of futures frameworks and tools in developing design centred ones and collaborative ventures between design and futures in 'opening up authentic alternative futures' (Jae, 2023, in press).

In our view, we need to radically reconsider our options, and offer our student real, actionable and critically robust means and strategies for engaging critically and productively in supporting, facilitating and materialising design infused and situated futures. As the Jordanian and British-based design education scholar Dana Abdulla (2021: online) writes:

Interestingly, any discussion of criticality in design is never promoted as going against the grain but only as operating in parallel to the status quo – despite the fact that design education is meant to be transformative. Here is another obstacle to change. We moan about not having power, we moan about design being backwards, and yet we contribute to the problem by failing to imagine how things can be otherwise.

In FUEL4DESIGN we have attempted to engage in such questions and while they have been challenging, we have also hosted a series of related project events that have taken up and opened out such matters. Mazé (2019: 34) has, 'As designers, we may not only put forward shallow claims of 'solving problems' or 'making a difference', or designed visions of the future to open up for thinking and doing otherwise, including handing over the question to others (as a political act)'. She argues that design and other disciplines can

learn from the political reflexivity that characterises work in Futures Studies. In *Design Futures Literacies* we have followed such a line in also attempting to problematise and re-situate futures as pluriversal and that they need to depart from confirmatory planning and linear decision-making approaches and policies.

Added to this is a growing maturation of design as a knowledge domain in its own right and its relations to other modes of knowing (e.g. Farías & Sánchez Criado, 2018). In this sense our project into design futures literacies might also have been labelled designs' futures literacies. This indicates, and recursively not only reflexively, that futures and literacies and design are plural (Barrineau, et al., 2022; Perry, 2021; Barendregt et al., 2023, in press) and that the futures literacies we have engaged with and reflect on this need to be claimed, teased out, challenged and built.

This developmental articulation further needs to be shared and revised by designers, design educators and researchers and the wider professions that make up design in today's and tomorrow's markets and in the ways it plays into and is enunciated in its socio-techno material presence in our daily lives. Even further still, needed is fuller recognition of our more-than-human partners and travellers in learning how to work within and with design futures ecologies that are ethical, responsible and sustainable.

In composing *Design Futures Literacies* we have not intended to arrive at a set of prescriptions nor programmatic solutions. Rather, we have assembled a diversity of ways of working and communicating diversely about the potential - and the need for design - to more fully, critically and productively engage with futures and learning and the dynamics between the two [[→ SEE FEATURE 2](#)]. For us, these are sites of experimentation and engagement. They are also matters of struggles between the inherited and assumed and the prospective and proposed. As Barendregt et al. (2023, in press) comment.

... in the spirit of Freirean pedagogy, it is not enough to proclaim a desire to contribute to social change; we must also seriously consider how our own educational activities both challenge and reinforce the status quo, and redesign them so that they serve and reflect emancipatory aims. We must be committed to criticality in both means and ends, and position ourselves as co-learners with our students, giving them space to lead and contribute to social transformation.

What is this 'otherwise'?

How might all of these concerns, questions, explorations and reflections amount to a design futures education that works otherwise?

That is, in ways that work to re-frame and enact differently design learning suited to 21st-century conditions and contexts?

And not towards them in a modernist trajectory, but reflexively and recursively in and through and with them to develop robust, relationally realisable anticipatory design knowing, sharing and survival?

Design must engage in transformative practices of its own making, and in conjunction with others, if it is to have any place in shaping planetary futures in ways that its foundations have partly undermined so far, as Noel. et al. (2023) elaborate concerning a decolonised pluriversally located and practised design curriculum centred on poistionality, ontological design and relationality.

The otherwise it's not a process of negotiation or a business transaction. Do not try and sell it to me like something you can flog at a flea market; it is not ingenious entrepreneurial, or even worse 'innovative'. It is not interested in perfecting humanity using AI, or colonizing space, or resplendence for everyone bought with gold stolen from Mars. It does not breathe in line the stock market or debate the worth of granddaddy's life if he cannot work anymore; it is not like the race to cure cancer or eliminate climate change by planting trees via a search engine. It is not cleaning the seas or beaches by hand whilst BP watches. It is not an edict or a declaration of independence or a manifesto. It's not a contract to sign or bargaining for better pay or a four-day work week. Even if it looks like a contract, don't sign it. (Olufemi, 2021: 120).

What then might a design otherwise not only be but become? How are we to learn how to make it and through collective and pluralistic pursuits that are not centred on disposability, replacement and reduction? What do we need to learn from movements on decolonising knowledge and decolonising design? What wealth of insight and practice from indigenous knowledge communities, systems and practices might we learn to value and draw on to inform and to steer design learning? What discourses, concepts, analyses, methods, tools and techniques does our transdisciplinary design need to expand and also develop further in specific design infused and re-fused futures, both despatched as unsuitable and reignited with energy, engagement and re-direction as students grown into their design identities and professional practices?

In recent years the term 'otherwise' has appeared in a variety of educational and research venues and reflects growing interest in knowledge as being plural, dynamic and undergoing reframing through attention to a diversity of forms and contexts in which it is developed, acquitted, shared and applied. Decolonising Design takes up such matters in the form of a collective working to clarify and advance pluralist and global design perspectives and practices (The Decolonising Group, 2017; Schultz, et al., 2019), along with the production of a manifesto (Abdullah, et al., 2019), related publications on design institutional change (Ansari & Keim, 2021), education and transformation, including the Goba South and building coalitions for change (e.g. van Amstel, et al., 2021). Most recently Tunstall (2023) highlights personal experience, professional practice, education and collective action as necessary and enlivening diverse, positional, societal and ethical aspects in *Decolonizing Design: A cultural justice guidebook*.

For design universities and the design profession globally, the modes, means and mediations of design knowing and sharing are undergoing deep challenges that include the ways we formally and systemically address matters of 'speaking positions', inclusivity and diversity and representativity and pluriversality in looking, working and engaging beyond western norms, world views, practices and scopes (Noel, et al., 2023).

Powers of Unknowing and Not-knowing

BY Betti Marenko

Why do we insist so much on the notion of otherwise? Why otherwisings even?

Implicit (or immanent, better) in any notion of otherwise, whichever way declined, is a remarkable dimension, almost banal in its self-evidence, and for that perhaps even more portentous, generative and unsettling. In fact, it is not even a dimension, rather a kinetic property: how a vista (with its accompanying sensation, perceptions, thought-explosions, ways of breathing too) can expand and grow precisely in the very same instance when one is pivoting in the dark.

There is a latent paradox inhabiting this moment, the simultaneous event of a dancing atomic explosion that captures what cannot be known in advance, and the rather feeble attempt to name it beforehand, clearly the work of an outcome-driven mentality, of a way (designerly or otherwise) bent to describe what could be ahead of its manifestation.

It is not presumptuous to state that these attempts (of naming, describing, labelling) are destined to fail, always, and not just

because of the limitation of a language which in this circumstantial event can only falter. This is one of those paradoxically situations in which design (as it is deemed to be) simply cannot intervene.

Can the otherwise (now a place, now a state of existence, now a tension towards, now an unexpected torsion that transforms the known in the unfamiliar) be designed? This is to say: can difference be designed? Can the virtual? Can the not-yet be designed?

Here the paradox become almost luminous, so let's grab its fleeting glow to begin to disentangle the bundle of thoughts and practices that converge in the many designings we have summoned.

If to design is already to be engaged with the not-yet, how do we ensure that this propensity to world-build the non-existent does not end up congealing the moving force of becoming into a deadly blueprint? How do we liberate anticipation from wanting to know tomorrow only to be better prepared than yesterday, and instead anticipate as a way of retaining the propulsive, spontaneous impetus that is traversing one and every thing?

How do we redesign design's own capacity to stay with the otherwise, that is, its very own capacity to craft the not-yet and in so doing becoming other than itself?

It is a wager. To extract design (its practice, its theories, its ways...) from its own extractive nature is tantamount to perhaps the most hubristic desire of all: to finally plunge design (its practice, its theories, its ways, its obsessions, its delusion, its denials...) into the recursive flow of matter-thought where unknowing becomes our most experimental material and not-knowing our most formidable ally.

PoliMi Futures' Fictions: Testing The Critical Catalyst in Context

EXCERPTED & ADAPTED FROM: Harb, A. & Celi, M. (2023). 'The critical catalyst: A critical approach to design futures literacy'. *Diid - Disegno Industriale Industrial Design*, 79: online. [Link](#)

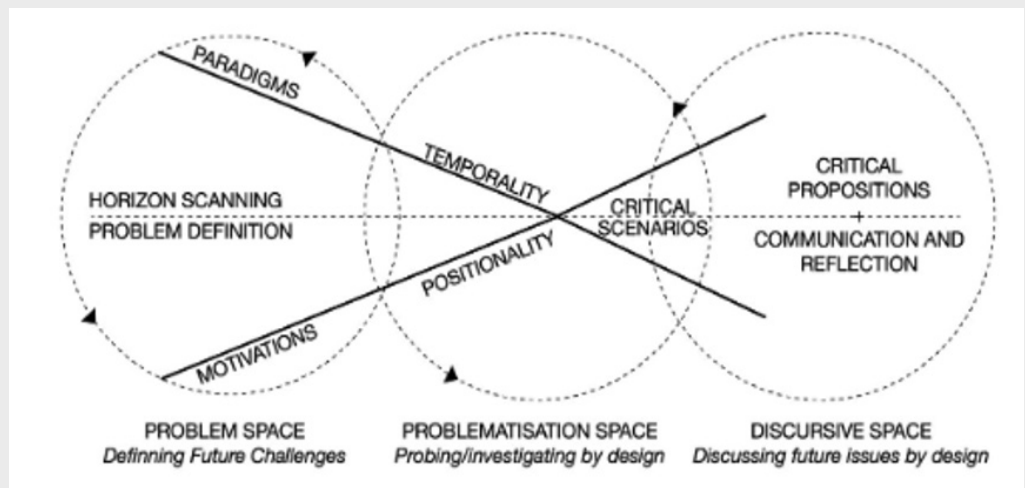
Affecting participants

The researchers conducted a test in an educational context to determine how the CC [critical Catalyst] could be used and identify how it might affect the participants.

The course is PoliMi Futures Fictions (POFF), the first module of the Concept Design Studio of the Master of Science program in Integrated Product Design at the Politecnico di Milano. The course is designed to expand the students' knowledge about the future and enhance their envisioning capabilities. It is intended to empower students with

future literacy and improve their critical thinking skills when they encounter future challenges. Ten sessions that focused on the course objectives were conducted over the course of five weeks. The course was delivered to 58 international students who worked in 9 groups. The course's pedagogical approach focuses primarily on practice and the RtD approach by building on the results from both the CC and FUEL4Design projects (Future Education and Literacy for Designers), funded by the Erasmus+ program. The course is intensive, and each week is based upon a challenge related to specific objectives and activities, as well as a daily plan with lectures, seminars, and milestones to achieve.

The projects in the course were focused on researching futures. The intention was not to produce a product design of the future, but to research, investigate, and question the context and parameters of design in a future context. The investigation was conducted by creating objects that tend to push the boundaries and limits of conventional design practice to seek alternative paths and potential directions of the futures, as well as the implications and consequences of particular technologies.



Three spaces

The activities revolved around using the elements in the CC and applying them to the course structure that we developed (Figure 1) as follows.

Problem Space.

For the first stage of the course, the students identified the topic and delved deeper into understanding the real issue and challenges. We asked the students to work with the Future Forces Canvas (FUEL4DESIGN, 2021), which we developed as an analytical tool for the horizon scanning stage, in which designers are asked to map emerging trends in 11 sections that drive the future. In addition to defining the topic and mapping trends, the first layer of the CC - the Paradigms - was introduced, along with the Motivations, in which the designers are asked to identify the purpose of engaging in the project and the perspective from which they want to approach it (Figure 1).

Problematisation Space.

The second stage is to analyse the findings of the first stage by building the future timeline. The future timeline is the projection of the potential implications

and consequences of particular events or influential points in their futures time-line. Following the timeline is the Critical diegetic scenario. In this exercise, the critical diegetic scenarios cards were introduced, and the explanation of how they work with the timeline was supported with examples from projects.

Discursive Space.

The third stage we proposed is the critical propositions cards, which is the stage in which designers can create concepts and provocative prototypes to debate the issue under investigation. The propositions are complemented with critical pragmatics, another layer that facilitates understanding and the design of a critical object's aesthetics (Figure 2).

◀ Figure 1: Students' Paradigms, Motivations, and horizon scanning exercises (screenshot from the course Miro-board). (Image credit: PoliMI).

▼ Figure 2: Example of critical proposition cards. (Image credit: PoliMI).



On Otherwising, Design and Futures

BY Andrew Morrison

Otherwising

In taking up Betti Marenko's wager noted above, we suggest design futures literacies and pedagogies might be furthered through a redirection of both thinking and acting that is realised through activities of 'otherwising'. Otherwising is given in the form of a gerund or -ing from as Lury (2018) motivates for in working with changing methodologies in shaping knowing through making. This grammatical form otherwise-ing accentuates the dynamic, process-oriented character of shaping knowledge. Attention is drawn in its choice to the activity centred nature of making shaping and sharing knowledge that is drawn from a diversity of settings and sources. The 'other' refers to different ways of arriving at and facilitating such knowing in a wider ontological sense, as a pluriversal activity, not an inclusion of 'other' views into only western frames. The other here also refers to difference, to different ways of shaping and acting our design futures literacies, and to seeking how to do so through dialogue and collaboration, less contest and competition perhaps. This is not to set up yet more binary oppositions, but rather to commence relationally, and to let relations be found, that they may flow, and be

directed as needed and suited to situations and potential alternative future shaping.

If not about binarism, the other is only the half of it and perhaps the easier half to identify, to work with, through which we may proceed, and reflect, recursively, and work to exchange contextually diverse, different and complementary modes of knowing within and across cultures and experiences. The more nebulous, and perhaps challenging aspect of otherwising is to be open to ways of coming to know, of becoming together differently, in learning what might be wise to do and to avoid, and how to talk more sensitively and productively about what is today not often labelled, namely wisdom. Such wisdom is built through our being other together. Yet it is also dependent on being able to identify and position what is valued, and why so and to what ends, those being ones that are not destinations or charted arrivals, but pathways to be shaped in process. To pitch and pose a 21st century onto-epistemological dynamic asks that we enunciate the 'wise' in otherwising.

Knowledge and wisdom

Simply put, knowledge is arrived at through the accumulation of facts and data, as substance, stuff, volume. Knowing what and knowing how to do things are essential to human existence, and yet knowing why we pursue them can be obscured, remain behind the curtain, so to speak. (Let's skip massive philosophical matters here for a moment). Knowledge is also generated and valued through being exchanged.

This is both knowledge and knowing that is made material via situated activities that include a diversity of participants, not only human. Together, they create, convey and communicate generative, critical and emergent modes of design knowing. These modes are in flux and are influenced

by given principles and practices that are realised through the application of select methods and exercised techniques together with the formation of new tools, strategies, policies and perspectives.

What though is it that we come to value and how so? In contrast, wisdom, not a word we use much today, is indicative of different processes and judgements. Wisdom is more a matter of making ethically informed and synthesised insights and well-framed choices, decisions and judgments. It is arrived at through experience and considered reflection over time.

Wisdom entails us understanding the consequences of these positions and pathways, but also their potential, their vibrancy, their animation. Of appreciating why and what and how and for what reasons we think and feel, act and share what we consider and communicate. This is not merely about matter and mattering, of solid state as data waiting to be amassed, configured, or sold, that is to be put to purposive and often ideologised use. Moving from wise to wisdom to 'wising' (an odd neologism), demands that we return to who is doing the work of shaping our design futures. Key is to focus for and with whom it is that our shaping design futures in and as learning, pedagogies and practices of knowing are being explored.

In working towards vibrant, plural design futures that will still involve us in creating and exchanging, from concepts to artifacts, and positioning design as the interplay between a diversity of actors and processes, where human control is not primordially suffocating of deeper symbiotic dynamics, and ultimately flourishing and well-being that draws on stewardship and not exhaustion of the natural world or our human vitality.

Otherwising - as indicated in its gerundive developmental, processural and active form - is also multiple, and entwined. This mode and indeed experience of becoming highlights that energies, affects and possibilities will still be hugely important for design. However, they will be realised through major value shifts that will challenge the assumed practices of many design schools and their societal and economic positions and practices. They demand that we discard hollow functionalism and market-driven expediency centred on profit and advantage. They invite us to engage differently to design with environmental awareness, cultural and intellectual humility, respect for materials and methods. The motivate is to engage in difficult changes in negotiating commitment to emerging, alternative needs and deeply troubling causes that are already embedded in the systemic entanglements within which we currently sit, teach and learn and for whom 'business as usual' is deflection, denial, and, ultimately, corrosive defeat.

Design otherwising

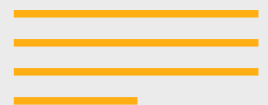
In contrast, design otherwising, is a design construction that is most certainly methodological. Through designing design, it offers the wider fields of literacies and pedagogies potential to generate spaces and processes for the realisation of ways to shape and share hopeful and more abundant design-rich futures. Here for example, we will find elaborated approaches to working with the temporal as design material as with tracing developments between conceptualisation and application, such as in working with design future-oriented prototypes that work heuristically and recursively to challenge conventions and pose alternatives, ideationally and communicatively.

These are design futures imaginaries geared towards exploratory action in the present, or alternate presents, that will need to seek out, acknowledge and value insights and potential within processes of collaborative designing. Here we engage with another linked aspect, namely design futures otherwising. By including anticipatory perspectives, participative design futuring processes will need to further recognise limits to physical, environmental resources and ways to nurture design making in processes of 'care-full' adaptation not exhaustion. This is to invest in longer-term thinking and 'the long view'. Such work will include small powerful shifts, propositionally risky, communicatively rough-edged but conceptually fertile, together with larger more seemingly evanescent possibilities and indistinct outcomes that when seen as refractive and recursive methodologies and their embodiment in new toolkits and participative processes may in turn seem less fleeting or unclear.

Design futures otherwising

Design futures otherwising needs to be learned, that is in its character as plural, distributed and processual. It also needs to be acquired over time as wisdom that includes looking ahead in which design learning is geared towards respectful and synthetic work with a diversity of cultural, ecological and educationally oriented ways of knowing. These ways of knowing need further elaboration methodologically in terms of design tools development and techniques that need to be honed in and through collaborative use and critique, change and re-application, in and beyond our design studios and current fieldwork activities and practices by ways of experimental, productive design making and recursive appraisal and reworking.

These are not unknown to us as actions and processes but the challenges of values and relations to powers of markets and cultures will challenge us. We cannot but engage in working more ecologically and in terms of global knowledge forms and experiences as the wisdom that exists, is obscured and will need to be discussed and appointed, applied selectively in context and hopefully strengthened through the vibrancy of anticipatory and relational design literacies and pedagogies. These are dynamic ways of learning and working, communicating and living not geared towards futures, teleologically mapped out. They are situated, experiential, engaging and influential by ways of working with futures in multiple materialities of designing otherwising that itself is materialised as and through design otherwising.



In educational research, for example, Perry (2020) argues that a key need in approaching literacies of globality (see e.g. Tierney, 2021) is to unpack notions and practices of imaginaries; for the futures of design education and future in design education imaginaries need to be further examined and circulated in, as and through their cultural locations and affinities. Transforming design education by including focus on futures also means we need to equally extend critical prepositioning and resource-sharing and collaborative shaping of socio-technical imaginaries as design materials, extended to embodied, non-human and systemic design aspects, that is otherwise than typically so in only western centric design academies. This move is psychological and cultural, expressive and formative. The Zimbabwean fiction writer Tsitsi Dangarembga (2022: 151–152) observes in her collection of essays *Black and Female* that:

... our cognitive-affective systems are the only true site of decolonisation. Decolonisation that frees all from fear requires a new revolution of the imaginary and its products. This revolution of the imaginary and new imaginative production can only be affected by bringing to consciousness the discursive products of those who have been relegated to the subjective status of the 'not-I', in spite of the anxiety and fear that this 'not-I' and therefore its products may induce in most of us. These discursive products of black imagination and endeavour have been suppressed and devalued by the systems of the colonial enterprise - social, political and economic - for centuries, and continue to be. Not working towards discursive equality will hold us on our present trajectory. There are signs that this trajectory will, perhaps sooner than we expected, bring us to a place of pain that exceeds the pain of confronting the colonial 'not-I', a spectre that hangs over all of us.

Learning how to learn design futures global literacies then needs to include for merging and changing futures, not only to adapt but to be primed and open to being able to act and to design 'otherwise'. This is essentially about design futures learning tackling head on how to engage more fully in acknowledging the abundance of wider, global sociocultural locations and dynamics of knowledge and wisdom. For design this asks that we value perspectives, experience and long-term knowledges and support our students to pursue and investigate and work with them in a spirit of curiosity with respect.

In this way, our reframings of design and knowing, as argued strongly by practitioners and researchers from Latin America – on design against oppression and towards liberatory cultural and educational politics and practices (e.g. Mingolo, 1995; Mingolo, 2000; see also the Transmodernity journal, e.g. Grosfoguel, 2011; Van Amstel & Gonzatto, 2020; Serpa, et al., 2022) – provides us with socio-culturally situated resources and situated possible imaginary and pragmatic bridging means (e.g. Glăveanu, 2020) to engage in anticipatory design future shaping.

'But what are we to DO and HOW are we to do it?', echo design educators. How do we get from notions of otherwise to activities of otherwisings? Designers make, shape and sell. They wrangle, upend and reconfigure. Materials influence our acts of making and people inform and complicate our notions of use and usability. Participation and accountability influence ways we work and respond to need and contexts. Yet there are profound

problems with how assumed worldviews and embedded practices frame and direct our engagement with finding alternate paths and mode of unlearning that shaping futures will continue to demand. What are we signing up for? What do our design pedagogies do? And what might they become, that is continue to remain fuel for an openness to what emerges and might even prevail as such, in a mode of knowing?

That is to propositionally and prospectively position and offer our students who will be populating the world with their designs and with groups and communities, companies and specialists. Such matters are addressed in an extract from 'The critical catalyst: A critical approach to design futures literacy' [[→ SEE FEATURE 3](#)] by Harb and Celi (2023: online) that highlights an approach to empowering students critical design futures literacies through researching design in futures perspectives.

Such catalysts to speculation, embodiment, concept development and abductive application in shaping design futures need to confront the contradictory character of a disposable, consumerist design. Developing counter-functional thinking and design prototypes through to embodied engagement is not just something for Europe-located design schools such as ours to address. In writing about global, pluriversal (and by extension design) literacies, Perry (2020: 307) writes that:

The project of pluriversal literacies is not to eliminate print text but rather to find ways to incorporate a much broader understanding of relational human experience. To this end, and building on the work of decolonial activists and theorists such as Harding (2018) and Chakrabarty (2000), this development in literacies theory requires an acceptance of contradictions and of new types of alliances and relations across peoples, traditions, and onto-ethico-epistemologies. Beyond ways of being, this call infers rethinking relations and affects across types of being (Haraway, 2016). Engaging across perspectives and practices from multiple disciplines and contexts has motivated and strengthened a pluriversal framework for literacies that cuts across the siloed sector and disciplinary structures that currently dominate the drivers of literacy education. After all, we share one globe, and to acknowledge multiple ways and types of being in this world compels the field of global literacy education to support multiple ways of making meaning and engaging in that shared world. (Perry, 2020: 307)

This extends to design's conceptual and intellectual engagement in Anticipation Studies and making links between indigenous knowledge forms and practices, locations and learning (e.g. López-López & Coello, 2021) as well as in pragmatic pluriversal design (Tunstall, 2023); [[→ SEE FEATURE 4](#)]. From a plural futures view, this is also about looking beyond futures studies and design to other social sciences generative work such as the recent emergence of 'possibility studies' (see Glăveanu, 2023), where it is still to appear. The several Features presented below are illustrative of some of these possible ways to articulate and communicate design differently from within our project; there is great potential for design schools to do so internationally and to continue to gather otherwise diverse and dispersed resources, such as is underway with diverse, global contributions on methods and methodologies in the second edited collection of *The Routledge Companion to Design Research* (Rodgers & Yee, 2023).

Decolonising Futures in Design Education

Next, we present selected material from a public event in FUEL4DESIGN hosted by the project partner ELISAVA in Spain that aimed to open out experiences, needs and discussion around matters of decolonising design (see the 2018 special issue of *Design & Culture*) and relations to design futures literacies education [[→ SEE FEATURE 5](#)] the third section of the event that centred on 'Making' is featured here and as with previous ones it included keynote videos, a panel discussion and dialogues between participants. The programme, videos and summaries of statements, reactions and open questions can all be accessed via the project website: [Link ↗](#).

Dispatches on How to Imagine and Design an Otherwise

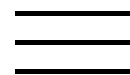
In a second selected event, we feature the closing online event of the FUEL4DESIGN project. The aim of this event was to work synthetically and critically in gathering and re-framing experiences in the project through dialogues with participants in a two-part event that included an open public format and a registered workshop session. The following text [[→ SEE FEATURE 6](#)] is a collaborative presentation and reflection from the host partner UAL in the U.K. The online version is here for readers' full access: [Link ↗](#).

Translations and transpositions

These two large events formed part of the project's planned public discourse and communication strategy. In addition, during the final work package period in which much of the material of the two volumes to *Design Futures Literacies* was developed and assembled, a number of related directions, resources and events were devised that also contributed to ongoing concerns and actions concerning ventures into a 'design otherwising' and 'designing otherwising'.

The first of these we have selected amongst others also addresses concerns what we have labelled 'Translations and transpositions'. It draws forth the concerns on philosophical and communicative framings of design futures education as it needs to continue to work with a diversity of world views, terms and concepts and related practices.

We also mention to the rapid and expanding role of Artificial Intelligence (A.I.) in the contexts of design futures learning and some of the implications for ongoing work in critical – creative design futures literacies policies and pedagogies. [[→ SEE FEATURE 7](#)]



Decolonising Futures in Design Education

BY Oscar Tomico, Guim Espelt Estopà & Laura Clèries

FROM: [Link ↗](#)



Making and Futures

Introduction by Oscar Tomico.

Learning objectives:

- be oriented to issues, views, challenges and potentials on decolonising design and futures making
- be introduced to matters of decolonising futures in the context of first person perspective design interventions
- learn and apply first person perspective design interventions in futures scouting through making.

Keynote: Laura Forlano: "Design's Intimacies".

Summary:

- How do we imagine, design, use and maintain digital technologies in ways that allow all lives – human and non-human – to flourish? The answer to this question requires new understandings of what it means to be human, new conceptualizations of knowledge and expertise, new inventive methodologies as well as new ethical and political concepts. Drawing on an autoethnographic account of living with "smart" medical systems that draws on Haraway's situated and partial knowledge, I develop the concept of the disabled cyborg, which suggests a different set contingencies and processes. Finally, I will illustrate the ways in which a first-person perspective might open up new questions and practices for design futures. How might we create a more generous understanding of human-machine relations?

Discussion panel: Saül Baeza, Mark Ingham, Sergio Urueña, Tomás Vivanco, Elizabeth Wright.

Starting questions:

- How might designers develop a deeper understanding of their own partial and situated knowledge through autoethnography and taking a 1st person perspective? What is the role of theory in an approach grounded in praxis?
- What does it mean to develop a deeper understanding of the ethics, politics and responsibilities of designing and living with non-humans – whether algorithmic or natural systems? Why/how do you care about these non-human relations?
- When you start with a deep understanding of your own everyday relations with non-humans, how might methodologies for design futuring evolve in new ways? Can you ask "what if" about your own relations?

STATEMENTS AND REACTIONS

- Technoableism makes me think about Elon Musk's recent claim to have invented a microchip that can 'cure' autism, much to the #ActuallyAutistic community's frustration
- [Oscar Tomico], I'd love to know more about the perks and challenges of combining 1st, 2nd and 3rd person perspectives when making empathic art/design.
 - Have a look at this article: <http://www.ijdesign.org/index.php/IJDesign/article/view/2543>
- Your attention had to shift from monitoring your own body to caring for the system.
- Especially powerful as a disabled person to rebel against the self-proclaimed 'objectivity' of academic sciences, given disabled/crip histories in the sciences
- Good to offend current ossified academic institutions!
- We simultaneously need to tackle the mistrust of the individual in 'scientific' research – at the very least this reveals to us as researchers the need to trust OUR respondents as well as our own accounts of lived, entangled experience; this is the trap of practice-based evidence in the care professions and research also – see PCCS Books as a key publisher in this field
- There is rigour in 1PP as there is in any methodology.
 - 'Rigour' is so loaded a term in 'Western' academia
 - Who decides what is rigour?
 - Who decides what gets validated or not?
 - "We aren't trying to validate anything, we are trying to explore, to understand" I tried to explain this to a qualifying exam committee, and they failed me in an information school. haha.
- I am also very concerned that the disability movements, while successful in many ways, leave behind individuals living with mental ill health – they are not so visible, and do not have the same capacity to organise and sustain resistance, and remain for the most part without voice, and intensely mistrusted in research.
 - Disability justice work often speaks to this very explicitly, in particular advocating for interdependence and community care/support away from the state/police – accounting for risk of violence of people with mental health distress. Risk of experiencing violence – not perpetuating (just to be clear).
- 'I am because we are' / 'A person is a person through other people' – I'm thinking about Ubuntu philosophy and what that can mean for the '1st person'.
- I'm fully over white heterosexual normative male perspectives!!!! my world is shaped in sometimes dangerous ways by these worldviews
- When self perspectives clashes with other perspectives, there is a chance for changing perspectives.
- Language and formality should not be a barrier to knowledge exchange.
- Situating yourself, ancestry, place is important in relation to others.
- The practice-based research literature in the Person-Centred Approach is useful here – of course, originating with a white male in the US, but continually critiqued and reflected upon through a lively and diverse community.
- I imagine we'd find that the dominant narratives don't fit real life experiences of all men racialised as 'white' and that the mechanisms of domination have tricked many of us into believing in a 'universality' of their experiences
- Janine [Francois]'s point about curiosity from yesterday is really key.
 - Being curious and suspicious at the same time?
 - Stay in the liminal space as we say. As long as possible.
- Questioning the cultural need to be an expert at all is also key.
 - This was a core point of [Janine Francois]'s talk yesterday: owning our state of not knowing/not being an expert.
 - Critical thinking is core to stopping the reliance on a single expert voice.

Building Pedagogical Futures in the Present – Dispatches on How to imagine and Design an Otherwise

BY Betti Marenko, Silke Lange & Pras Gunasekera

A dialogic space

This was a half-day online event which took place on the 7th of June 2022 organised by the UAL team, Betti Marenko, Silke Lange, and Pras Gunasekera.

We wanted to create a dialogic space to explore the transformative power of design education and the urgent need for futures literacies, underpinned by the intellectual outputs of the FUEL4Design project. It focused on, and expanded from, a showcase of the work produced by the FUEL4Design partners from 2019 to date. Together, we wanted to imagine an otherwise of design and futures education. Collectively, we wished to foster more just and ethical communities of learners, guided by principles of care, respect, and responsibility. We brought together a diverse group of educators whose experience and expertise were invaluable in contributing to the dialogic space with a critical perspective.

The event was structured into three phases:

Phase 1 – Showcase: each of the five intellectual outputs (IO) were showcased to participants through short videos (see below) created by each partner and IO owner.

Phase 2 – Response: participants were introduced to the videos created by our curated list of speakers who responded to the question: How to imagine an actionable otherwise of futures design literacies within (and beyond) the systemic conditions of our educational institutions? See below for videos.

Phase 3 – Dialogue: participants were split into preorganised breakout rooms led by one of the respondents who facilitated group discussion. The purpose was to develop actionable interventions and to reflect on what can be taken away, with a clear indication of at least one action to apply in participants' own context.

Phases 1 and 2

Phases 1 and 2 were open to the public and created an opportunity for us to widely disseminate the Intellectual Outputs as well the respondents' videos. Phase 3 was open to registered participants only. We designed the event with a particular structure in mind; to step out of the usual format of talk and Q&A or panel and instead we chose to have pre-recorded interventions to assemble a live documentation of a moment in time and to enable more time for sharing.

This structure was developed to prioritise what we can do together after listening and feeling inspired, trying to go a little beyond the act of passive receiving of content and instead mobilizing one's own practice in active discussion.

1. Ramia Mazé. Professor of Design for Social Innovation and Sustainability, London College of Communication, University of the Arts London.



Ramia Mazé. Professor of Design for Social Innovation and Sustainability, London College of Communication, University of the Arts London.

Professor Ramia Mazé begins her response by describing time as a Western, patriarchal, capitalist concept (commodifiable, countable) and suggests that for building different futures, the concept of time as seen in other cultures needs to be considered. For her, future can act as a modality to question our present. What is the role of design in such an approach? How can design be utilised as critical practice in relation to Futures? By posing these questions, Ramia invites us to challenge the status quo, open our minds and include different perspectives to ground and make real our alternative futures. For her, the future is not empty, and future making is a critical practice. These ideas form the politics of the present.



Dr Kush Patel. Faculty Member and Head of Studies (MA in Technology and Change), Sri Sri Institute of Art, Design, and Technology, Manipal Academy of Higher Education (MAHE), Bangalore, India.

Dr Kush Patel used the Zine of Archival Meta Data as a vehicle for their provocation: three acts, co-developed with students and facilitators to unpack archival aspects of HEI policies in India with 'actions', producing a set of questions to engage working groups and finally collaboratively synthesised reflections and actions in the form of a zine. They explained that the office of Anti-Inequity and Anti-Exclusive Excellence was an attempt to name the politics of survival – namely Queer Survival (inspired by Audre Lorde's call for naming politics of survival). The zine became a call for collective action to support the development of new knowledges and new ways of seeing the world. Kush left us with some questions to reflect on and inspire action such as 'What does institutional change with affirmative change look and feel like?' and 'Where do I fit into the process of changemaking?'.



Fahim Mohammadi. Professor of Design Foundation and experimental Design in Architecture and Industrial Design, Member of Senate, Stuttgart State Academy of Art and Design Germany.

Professor Fahim Mohammadi focused on the accessibility of Art and Design education, stating it to be a constitutional right, yet this not being the 'reality' we know. His provocation centred on a direct question: Are our institutions open and accessible beyond the cultural elites? Drawing on his personal experience, he recalled how, coming from a working-class background, he did not possess the 'lexicon' nor the social/cultural capital that is (tacitly) considered foundational in Art and Design HEIs. He reckons that this is still the case today, with current approaches to 'opening up' access for potential students not working i.e., the homogeneity of applicants does not mirror the society. What form of transformation do we need? Is it the conditions of our educational institutions or more broadly the conditions of our society that must change?



Tanveer Ahmed. Senior Lecturer in Fashion/Fashion Communication and Race, Central Saint Martins, University of the Arts London.

Tanveer Ahmed uses the metaphor of bricks throughout her response to provoke thought about the buildings we teach and learn within. A starting point for her own reflection is Audre Lorde's 'The Master's Tools will never dismantle the Master's House' – but who created the Master's House? Do we know the history of our education institutions? What do the names of the lecture theatres and university buildings tell us about where and what we are operating in? Can we teach radical Art and Design education within the confines of the Master's House? She thinks not. Her research and approach are to reimagine where we teach, opening different temporalities from the corridor to the canteen and during a lunch hour or after class which have the potential to transform Design education. How can we reimagine the spaces where we teach using a decolonial lens?



Dr Kai Syng Tan Artist, curator, academic and consultant. Senior Lecturer and Programme Leader of the new forthcoming Creative Arts Leadership MA at Manchester.

Dr Kai Syng Tan encourages us to 'think again' if we think that we are the solution given the neo liberalisation of Higher Education which has created toxic, (historically) exclusionary spaces that promote 'dog eat dog' survival ways of being and doing- 'like starving dogs fighting for scraps'. How do we engage with the elephant in the design lab, art studio and ivory tower? Kai introduces the concept of 'tentacular pedagogies', to enable us to unmake and remake the present, and make humanity more humane. Dismantling the monuments and redesigning the structures and tools that uphold the Master's narratives and build the Master's Houses are key to create the spaces that can reposition 'non-users' as the true masters and leaders.

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▲ Figure 1: Phase 1 with five guest videos (image credit: UAL, FUEL4DESIGN).

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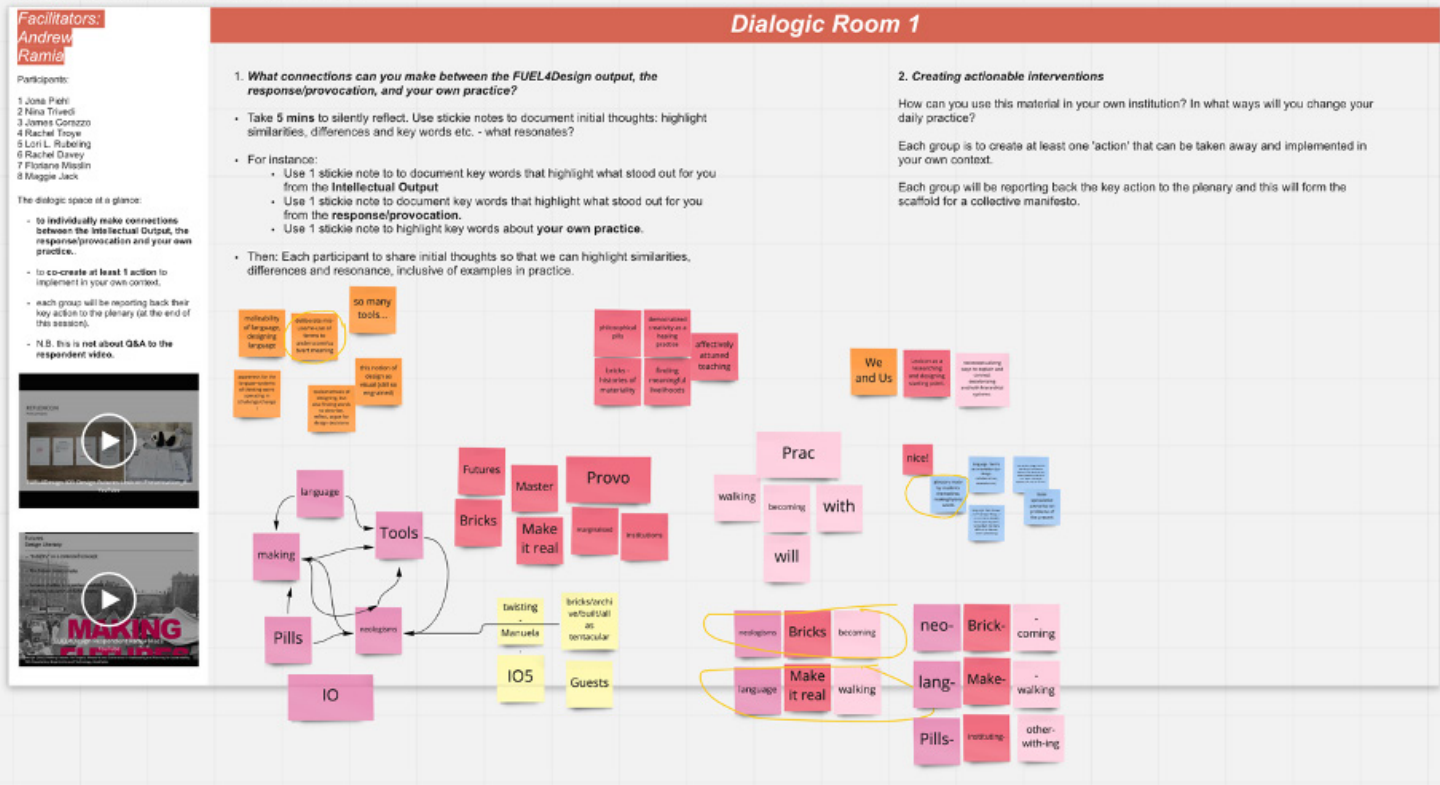
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beyond the human to include the ecological and non-human) purpose? For us to reflect on the future of education in the present means to engage with unequally distributed modes of knowledge-production, asymmetries of communication, in-built hierarchies, visible and invisible. It means to engage with matters of social, racial and environmental justice; it means to engage with and be concerned about its politics – and how the political dimension is found everywhere, in the ‘micro’ – in the gestures, positions, affirmations, intentions, relations, desires and affects that populate our

Dialogic Room 1: Facilitated by Andrew and Ramia



Phase 3: Dialogue

As the event was held online, Miro provided a fitting tool to capture the discussions that were emerging in the breakout rooms (see images). A key aim of the Dialogic Spaces was to explore how we as educators, practitioners, change makers affirm education as a transformative endeavour with a genuine social (which go

everyday. The culmination of the discussions within each of the Dialogic Spaces was to create an actionable intervention that could be applied in participants’ own contexts. The synthesis of these interventions would form the basis of a manifesto for Designing an Otherwise (see image below).

▲ Figure 2: Example of a Dialogic Online Space in Miro.

Conclusion

A key remit of this event was the idea of going beyond a mere showcasing of our work.

Instead, what we tried to achieve was a more substantial and explicit way of building connections by sharing reflections and experiences, prompting questions especially uncomfortable ones, and above all, we wanted to make a collective attempt at developing actionable interventions that participants could 'take home' with them and pilot in their own institution.

The dialogic space on Miro fostered precisely this kind of extended participation. Here below you can find a sample of the interventions emerged during the workshops:

Give students 'empty' time to digest and metabolise content and frame it as an active and essential part of their learning experience.

Give Permission: to wait, to be silent, to grab and let things go, to play.

Instigate quiet micro-dismantling actions in the everyday.

Introduce playful, sandpit moments that mobilise bodies, walk and talk together.

Surface experience of personal survival in safe spaces for all learners + teachers.

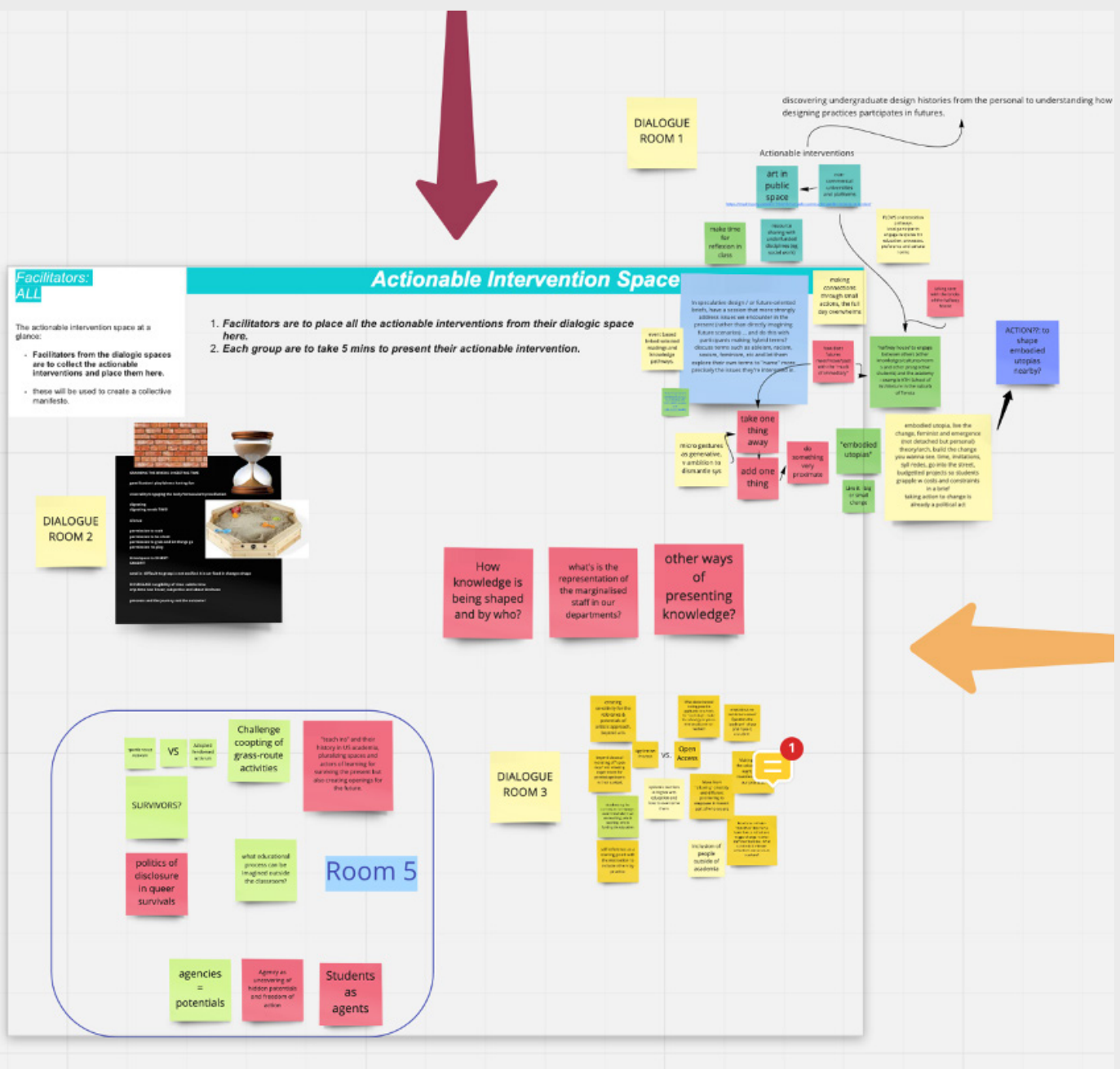
Prompting students to share their 'design' histories and narratives feeding in co-designed curriculum content.

Ask students to brainstorm and share ideas and feelings about notions such as ableism, racism, sexism, feminism, etc and let them explore, come up with their own terms, to "name" more precisely the issues they are interested in.

Making explicit the values that we uphold.

'Building Pedagogical Futures in the Present. Dispatches on How to Imagine and Design an Otherwise' was an experiment in thinking and practising an otherwise.

We are grateful to all the participants and speakers as everybody felt reenergised and invigorated by the event. Not only was its format engaging and powerfully provocative, as one of the attendees put it; it also worked admirably well as a platform for genuine sharing and exchange, beyond our expectations.



'Such moving affinities between each of our provocations today - my heart is full and full of gratitude for bringing us together... especially as we grapple with sites/ possibilities for dwelling/building otherwise critiques together.' (Kush Patel on Twitter).

▲ Figure 3: Actionable Interventions in the online space in Miro.

Working with multilingual design futures vocabularies

By Andrew Morrison, Palak Dudani & Vlad Lyachov

Decolonising design language

Decolonising design language demands a mix of modes, media and meditations, as well as exploratory, generative, engaging, playful and even disruptive strategies and tactics for making spaces for the very dynamics of language in use to be realised, that is in through and beyond and back into, contexts of design futural articulation (Mingolo, 2007, Gurney & Demuro, 2022).

Decolonising language education and education for decolonising language will need to attend to its words and vocabularies as they take shape, are circulated and divert, swerve and diverge from predominant sense-reference relations (Kondo & Swanson, 2020). They will need to be kept open and pliable, resisting too tight a formalisation and normalisation where change is happening or needed (Huang & Zhao, 2021).

Yet they will need to bear a measure of security and sensibility around shared values and meaningful uses where futures inquiries, creative design activities and mediated design meaning making (e.g. (Albawardi & Jones, 2020) works with the future as an indistinct, malleable and tentatively possible yet actually slippery material and means (e.g. Chandrasegaran, et al., 2023).

We will need to engage further in acts of 'translanguaging and literacies' (García & Kleifgen, 2020) to engage us in working towards different, 'care-full' settings and a wider and durably sustainable and planet and related social and environmental justice (see also Stibbe, 2021). As Law and Mol (2020. 276-277) elaborate:

Instead of avoiding multivocality, we might want to seek out terms that offer intellectual inspiration or suggest evocative forms of resistance. Instead of seeking to define our words, we might do better to exemplify them. But if we do this then we will need to explore words in practice; in their material-semiotic networks, discourses, assemblages or rhizomes. And instead of translating everything that is foreign into English, we might give some space to other terms, so that they are able to say, name, and evoke what they hope to say, name, or evoke. This is the quest of the contributions to this volume. Taken together, they seek to encourage and contribute to a new kind of 'international'.

Our design classrooms, studio, exhibitions, project spaces, collaborations and discussions are filled with not just language but languages (Clenton & Booth, 2020).

FUEL4DESIGN is communicated in English and this is the formal language of the project; however, much communication within our practices, designerly and pedagogic shifts between languages as the multilingual and multiliteracies of the project's interest, work and workings play out.

Figure 2 ▶
PhD student
in China
(anonymised),
notes in her
Mandarin
terms via the
Translexer
(2022).

TRANSLEXER		
Name of contributor:		
Email address:		
CATEGORY	TERM IN ENGLISH	TERM IN LANGUAGE/S (e.g Hindi)
Matching: when a term occurs in English and another language with similar meaning	Value	价值
	Approach	路径
	Methodology	方法论
	Articulate	清晰阐述
	Mapping	梳理
Distancing: when a term occurs in one language but is not present in another	gradual progress	演进
	Speculative	投机、推测、思辨
	Speculative Design	思辨性设计、推测性设计
	Social	社会的
	What type of values one tends to hold	价值观
Generating: where you make up a futures term in a language of your choice	[" Sociality "] The strong influence brought by human interventions that affect on daily life, common relationship, and public emotions of many people.	"社会性"
	[" trade-offs management "]	权衡利弊
	[" Shaping Value sense "] leading and shaping one's sense of values	价值观塑造
Applying: where your term maybe used in design and elsewhere	When discuss an ethical and speculative approach to design decision-making and design value evaluation.	

Translexing

'Translexing' is a term we have devised to position a specifically 'southern' perspective within the development of a more multilingual lexical and discursive turn in designing with and for futures (Pennycook & Makoni, 2020; see also Stornaiuolo A., et al., 2017; García & Kleifgen, 2020; Singh & Lu, 2020; Dahlberg, et al., 2022). These futures need to acknowledge and re-search our heritages and their forces in the present and shadows on shaping more equitable and socially just futures. This must extend to the articulation of those futures in a diversity of languages and their contexts of communicative purpose, circulation and critical co-creative designing.

The TRANSLEXER is a response to the dominant language of the project; it is an offering for designers to activate concepts, terms and knowledge in languages that they know, have and use and are in their design practices if not all formal presentations and documents. TRANSLEXER points to a need for design education and research communities to extend their notions of language and design to a polylingualism and a trans-lexical dynamics [Figure 2].

Here the potential is for languages of futures, in processes of creative making by design, to work to simultaneously mark out and mark up terms and words that carry future oriented meaning. There are opportunities to for design students and educators to contribute to wider specialist and cross-cultural understanding of futures literacies

themes, such as time and movement, that may be generated through attention to the making of interactions, services, products and systems processes, artifacts and knowledge.

The TRANSLEXER has been informed through dialogues in and between languages, as we have heard and commented on different terms in different cultures and languages. However, with English and even this LEXICON's own list of futures terms predominating, we may miss the contributions of many languages, histories and cultures in shaping our futures vocabularies. Though the TRANSLEXER is centred on words, these are located in contexts and in uses that are deeply situated. The device may thus offer us ways of asserting that notions and concepts and formulations may occur differently in different languages and their historical articulations and roles in present global discourses on futures.

The TRANSLEXER for us is presented here as an artifact for critical design based language thinking; such a device does not appear in Applied Linguistics textbooks, where attention to design tools such as we view it as being, is not part of a literacy of shaping futures language. Recent developments in Ecolinguistics (e.g. Stibbe 2015) and attention to language in Science Fiction, for example, offer some connections; our design futures pedagogies we will need to develop our own futures enacted, located and borrowed terms, but also generate new, tentative, emergent and long-range ones.

Design futures literacies may benefit, in our view, from all the languages and vocabularies it can muster, mix, secure and circulate. This is especially important as design education across the globe is not only conducted or discussed or debated in English and English as Another Language. We will also continue to need to be watchful for how dominant languages override local and indigenous ones even where matters environmental are in focus (e.g. Kondo & Swanson, 2020).

Technologies under scrutiny, futures scripted?

By Andrew Morrison & Betti Marenko

Words and work. Terms and automation. Human voice and machinic commands. Our languaging of futures and the relations between terms and world views, contexts of meaning making and use, is being coded further, and humans drive the databases and tags, bodies of texts and discourse types and the world views they articulate. However, in early 2023 as citizens - learners, educators, and researchers - we are already embroiled in rapidly appearing publications and mushrooming news material around our AI-infused and directed futures [[→ SEE FEATURE 7](#)]

At a time of our human struggles to meet carbon containment and the undeniable landscapes for urgent change from the most recent IPPC report. We need to continue to inquire into the given and new challenges A.I and human literacies around and with it. We already need to bring to design education for critical takes on technologised futures and their constitutive systems critical and creative engagement on terms, perspectives,

methods and mediations – and learn to communicate with and within these contexts and to read and analyse them critically. That is, as humans engage with the new AI tools, and their mimicry and verisimilitudinous posing and positions, their speed and their potential and actual re-infrastructuring of jobs, of human communication and our design ecologies and exchanges beyond ‘big data’ into the ways we do and must use language to position our senses and experiences [Figure 3].



Figure 3 ►
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. (Image
credit: Fab Lab
Barcelona).

Critical play

Much of the material in the two volumes *Design Futures Literacies* concerns pressing topics and societally and environmentally challenging topics for design students and educators as we together learn together how to develop preferable and possible futures through design. However, play, serendipity, divergences and drifting also played a part on many of our endeavours and experiments. This continued into wider contexts and engagements with others in taking design futures literacies into contexts of art and activism, performance and public cultures themselves undergoing contest and collective change.

Active Activism Act

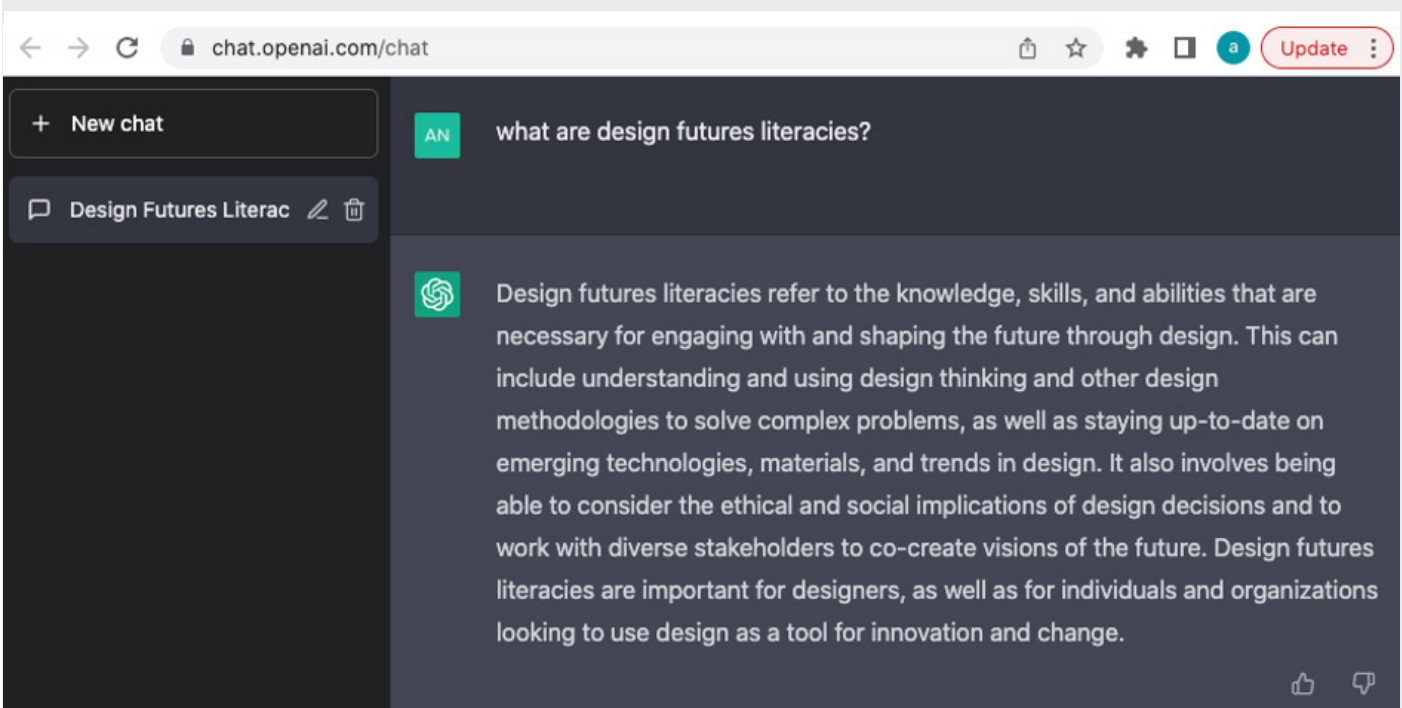
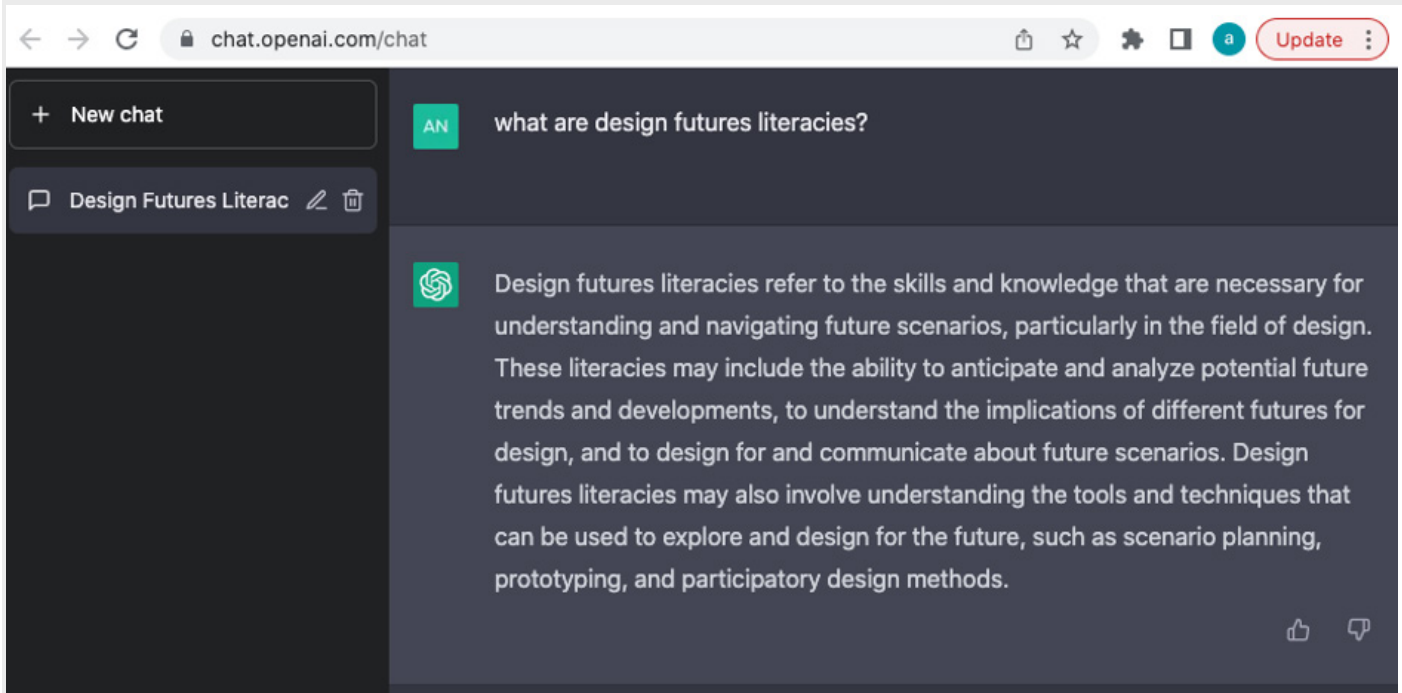
By Laura Clèries & Saúl Baeza

Active Activism Act is an exhibition that presents a series of young content creators, designers and audiovisual artists pushing for new culture scenarios, impact content and meaningful experiences, while exploring new interdisciplinary connections between mixed realities, participatory entertainment and gaming understandings [→ SEE FEATURE 8].

Ask the AI bot

BY Andrew Morrison

▼ Figures 1 & 2: In December 2022 we asked CHAT GPT to define 'Design Futures Literacies'.



Active Activism Act

BY ELISAVA

AAA is an exhibition by VIBE, a programme that addresses the future of cultural curated consumption and experience for Gen Z, co-funded by Europe Creative and directed by Elisava Research, Nemorin Film & Video, MagmaCultura and by-wire.net.

With the participation of: Samantha Hudson, XRebellion, Mabel Olea, laSADCUM, AMAGA, María Jurado, Baz Cuervo, Émergent Magazine, Maria Appleton, Dahli B. Ball, Joppe Venema, Eirinia Kalogera, Azeema Magazine, Afffirmations, DOES Salon x Joey Levenson, Kai Landre, NEURODUNGEON, No Signal Radio, Tashinga Matewe, Julen Beloki, Noé Etó.

▼ Figures 1 & 2: Active Activism Act exhibition at IDEAL Barcelona. (Photo by Ardila).



Reshaping Identities through Designing

BY: Guim Espelt Estopà (ELISAVA)

INTERVIEW: with Saúl Baeza, creative director at DOES.
[Link ↗](#)

This was a short interview, and I almost only needed one question: What DOES do?

According to Creative Director Saúl Baeza, they study how technology is defining new parameters about what 'identity' stands for. At the start, Baeza needed to clarify three types of identity: the physical – defined by our body or clothes, the digital – the data about us, and the functional – one's behaviour or mood, that can be tracked to predict future personal situations.

In mixing design practice at their studio in L'Hospitalet and an academic approach at Futures Everyday research group at Eindhoven University of Technology, DOES focuses on subversive biometrical AI.

Baeza puts it this way: 'We don't hack this technology so it doesn't work or it doesn't surveil us, but rather so we can control the output this surveillance technology generates, and therefore create new tools for expression'. They have designed facial prostheses to hack Apple Face ID, and succeeded in having up to 60 different identities associated to one single person.

'I can control the digital output that corporations have about my digital identity, and dissociate behaviours or actions of my physical life from the digital one', says Baeza (see also Baeza et al. 2021).

Knowing that recognition software is able to identify one person even if he/she does funny movements or faces, DOES also want to explore disassociation between one's body movement from the orders that this person's brain is giving. They started working with electro-stimulation machines to generate new movement patterns that the software couldn't recognise as done by the same person's recorded identity. 'We are able to break parameters: I can train my body to shoot a triple like LeBron James or to backhand like Rafa Nadal, but I could also make you shoot a gun and kill someone else against your will; the parameter range is very wide'.

Commercial companies use facial recognition to gather knowledge about their products' reaction, or insurance companies track your body through technology to evaluate your health risks. 'They are using bodies and exploiting them under corporate and economical parameters; but hundreds of other options that can be very interesting for identity expression are left aside'.

Baeza points out that, for futures making, legislation is a crucial issue: 'The regulation is much slower than the technological evolution, and for a few years there is always a absolute infringement of privacy; there are very few people aware of what accepting terms and conditions mean'. Ans also that 'Apple Face ID is a very interesting case, as people accepts giving their identities voluntarily and for free, supposedly because it is good for you and your security; so this social acceptance is an open door for corporations to own your digital and functional identities'.

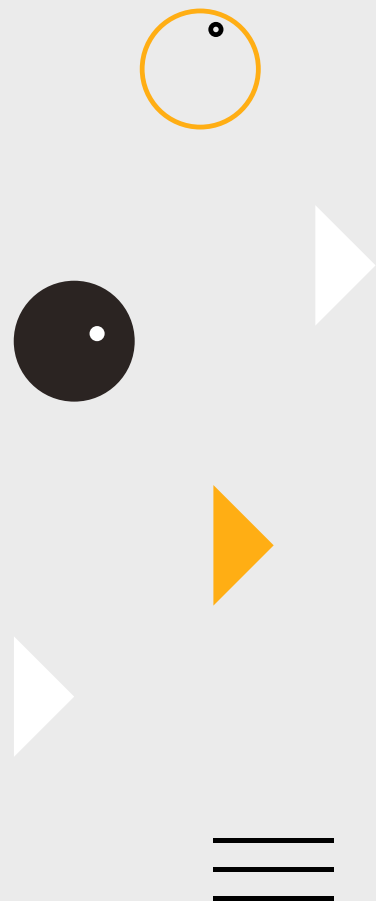


▲ Figure 1: Stills from Instagram reels (Saül Baeza). [Link](#).

Baeza is experimenting through his own body, using a first-person perspective ‘... because it’s the more direct way to test a system, the knowledge I gather is about my own body and I can use it for further developments, and because few other people would agree to be experimented on them the way I do with myself’. He is the subject and the object in the experiments DOES work on. As he says, ‘It is all about how we behave digitally and to explore identity multiplicities, but we are not doing it through code, but on our own physical bodies.’

Reference

Baeza Argüello, S., Wakkary, R., Andersen, K., & Tomico, O. (2021). ‘Exploring the potential of Apple Face ID as a drag, queer and trans technology design tool’. In *Proceedings of 2021 Designing Interactive Systems Conference*. Virtual event, 28 June – 2 July. New York. ACM. 1654–1667. [Link](#).



Over the past few years, movements from *March for Our Lives*, to *Black Lives Matter*, to the *Youth Strike for Climate* have shown us that people around the world are ready for a revolutionary cultural shift (Van Dyke & Taylor, 2018; Amenta & Polletta, 2019). At the forefront of many of these conversations are the voices of a new generation, one that seeks to create a world that is more free, just, and equitable for all.

They have a unique relationship with digital culture that manifests in how they use digital tools to consume and create, combining influences from all corners of the world, becoming the curators of the digital space (Márquez, et al., 2022). Teens are charting a new territory for digital and artistic expression without contradictions, taking everything as raw material. They are acting with agency and playing out activist behaviours through new mediums and (un)learning outside of traditional systems, beyond digital realms [[→ SEE FEATURE 9](#)].

The digital landscape offers them unparalleled access to information and inspiration free of physical boundaries, meaning their output can draw on the creative expression of cultures and communities around the world. Their creativity is not siloed, but multi-channel, urging cultural institutions into finding new ways to communicate on their level and align their activities with what they care about, from authenticity and inclusivity to the environment.

Scenarios in flux

By Corbin Raymond

Bringing futures forward by design inquiry requires a shift from futuring by normative predictive approaches to explorative pathway approaches. The way futures are realised, materialised and experienced today is diffractive because the futuring agency within society is spread across government, citizen groups and civic society.

The way futures are shaped and actualised happen across these individual and collective actor groups and makes it difficult for people to identify themselves in the futures being shaped around them. The concern this raises is how we might approach shared and collectively shaped futures [[→ SEE FEATURE 10](#)].

By embedding design futures literacies, the participants could communicate their imaginaries, envisionings and futures with each other, in a mode of play, that brought forward an enactment and performativity of engagement with each other in relation to the resources that were interacting with. The NGO has since launched citizen science, river health monitoring projects with the national government of the Department of Water and Sanitation and carries further support of government involvement towards this scenario-based initiative.

This case brings forward the coordinated action of collaborative governance and is informing a shared collectively shaped Futures through a relational anticipative view.

Conditions, contexts, critiques, change

By Andrew Morrison, Bastien Kerspern & Palak Dudani

The digital pivot enforced on FUEL4DESIGN for much of its formal life forced us to reconsider and redirect design futures literacies and pedagogies into online and distributed platforms and tools. This is covered in detail in Part II of this first volume and in the essays that comprise Volume 2. As Gourlay (2022) writes on posthumanism and the digital university, as a sector of higher education, post-graduate experienced deep challenges to working in physical and embodied ways already so built into our curricula and practices while also highlighting the extent to which digital tools and technologies are embedded in much of our design making, and its presentations and analyses.

Part of this was extended further into continuing to work with the design fictive persona and conceptual tool for design futuring called OCTOPA we had co-developed with a linked collaborative project *Amphibious Trilogies*. As we have written about this mode of working and specifics elsewhere, as excerpted below. In this sub-section we mention two ways in which we have worked towards what Nikolova and Todorova (2023, in press) refer to as 'desired remote possibilities of the future'.

With fiction as a futures design inflected method (e.g. Shaw & Reeves-Everson, 2017), we have explored ways to narratively work in a mode of 'writing otherwise' (Stacey & Wolff, 2016) with human and non-human entities to propose alternate ways of considering relational thinking and prospective action. We present an excerpt from a conference paper [[SEE FEATURE 12](#)] where we have worked in an oscillation between making and analysing in providing an account of a set of scale-based categories (see also Kerspern, 2018) for positioning and unpacking anticipatory designing and placing the design shaping that has informed it and maybe re-read analytically in using it. A mode of tentacular design/thinking.

Subsequent to that paper, in collaboration with CASUS LUDI in France (much present in FUEL4DESIGN), we developed a contribution to the final work package in the project. Further, we present some of the material form a new online site on OCTOPA [[SEE FEATURE 12](#)] that includes a game-located set of counterfactual activities for distributed, online participation. The focus is on the Northern Sea Route mostly along the Russian coast and was informed by other related arctic projects and fieldwork and consultations. As a design futures imaginary for problematising emerging presents, the 'site', environments, persona, routes to engagement and discussion prompts are designed to create disjunctures and redirections for dialogical negotiation. The narrative and workshops provide considerable resources for educators and learners' own visits and uses, and they are meant to work abductively in their paralogical character in a mode of anticipatory poetics. In a sense this is akin to what Glăveanu and Clapp (2018) address in their article entitled 'Distributed and participatory creativity as a form of cultural empowerment: The role of alterity, difference and collaboration'.

Otherwising: Explorative Pathways Towards Shared Futures in the Real world

BY Corbin Raymond

Co-ordinated futuring

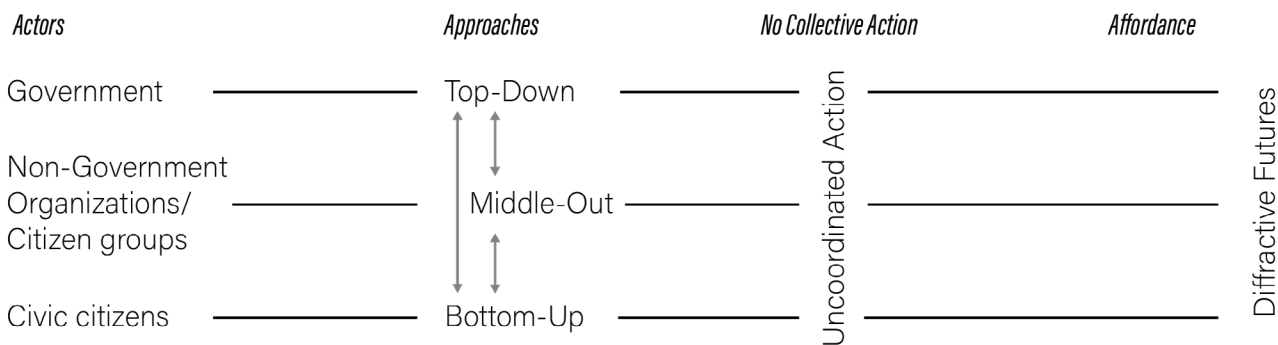
In working towards how we might approach shared and collectively shaped futures my proposition is that scenarios afford an articulative performativity during its enactment to shift from predictive to pathways of shared collectively shaped futures by exploring scenarios to inform

the concept of coordinated action from Collaborative Governance. I visualise this proposition in Figure 1 and reflect on my PhD research to surface concepts that inform otherwising – as learning-by-doing. Here collaborative governance offers a framing of coordinated action that pulls together the futuring agency of different cultural actors.

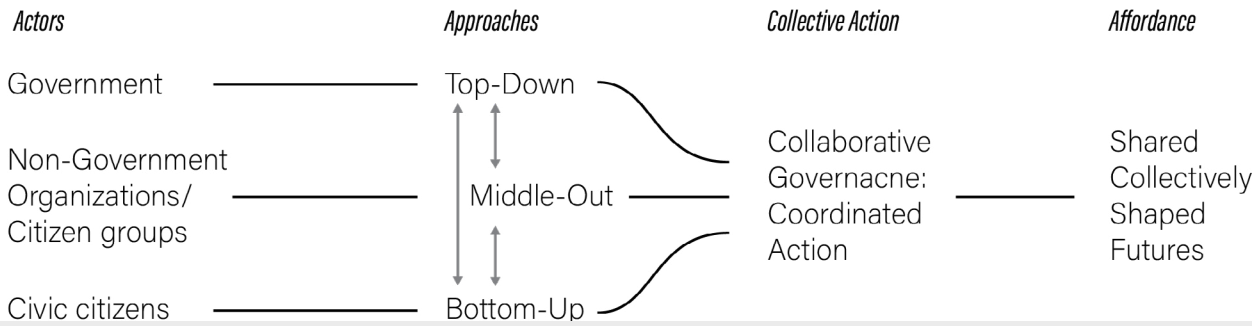
In this feature I will reflect on my PhD fieldwork to analytically lift the scenario building that I position between collective action and affordances of Coordinated Futuring in the Real World as seen in Figure 1. By focusing on an anticipatory view towards design futures, processes of designing and futuring offer a critical relational orientation when shaping futures. By reading between and together with these disciplinary approaches, common approaches can be identified as sourcing, to identify resources that are made material, through acts of trans(form)ation, in order to materialise collectively shaped futures.

► Figure 2:
An
anticipatory
relational
view
towards
design
futures.
(Image:
Corbin
Raymond,
2022).

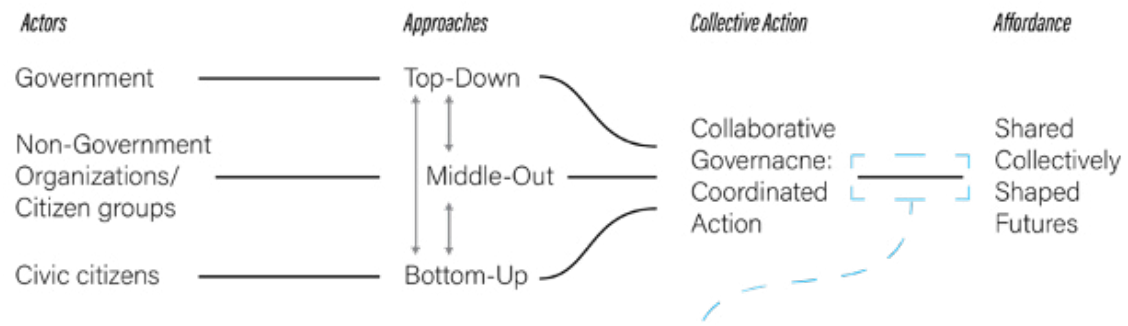
Uncoordinated Futuring in the Real World



Coordinated Futuring in the Real World



Coordinated Futuring in the Real World



Anticipatory relational view towards design futures

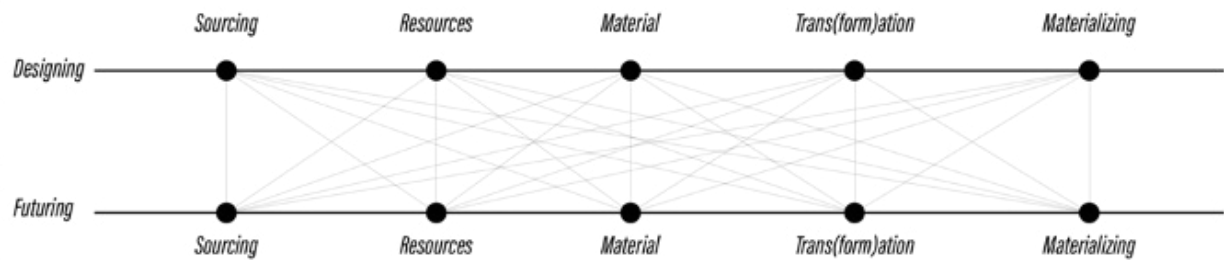
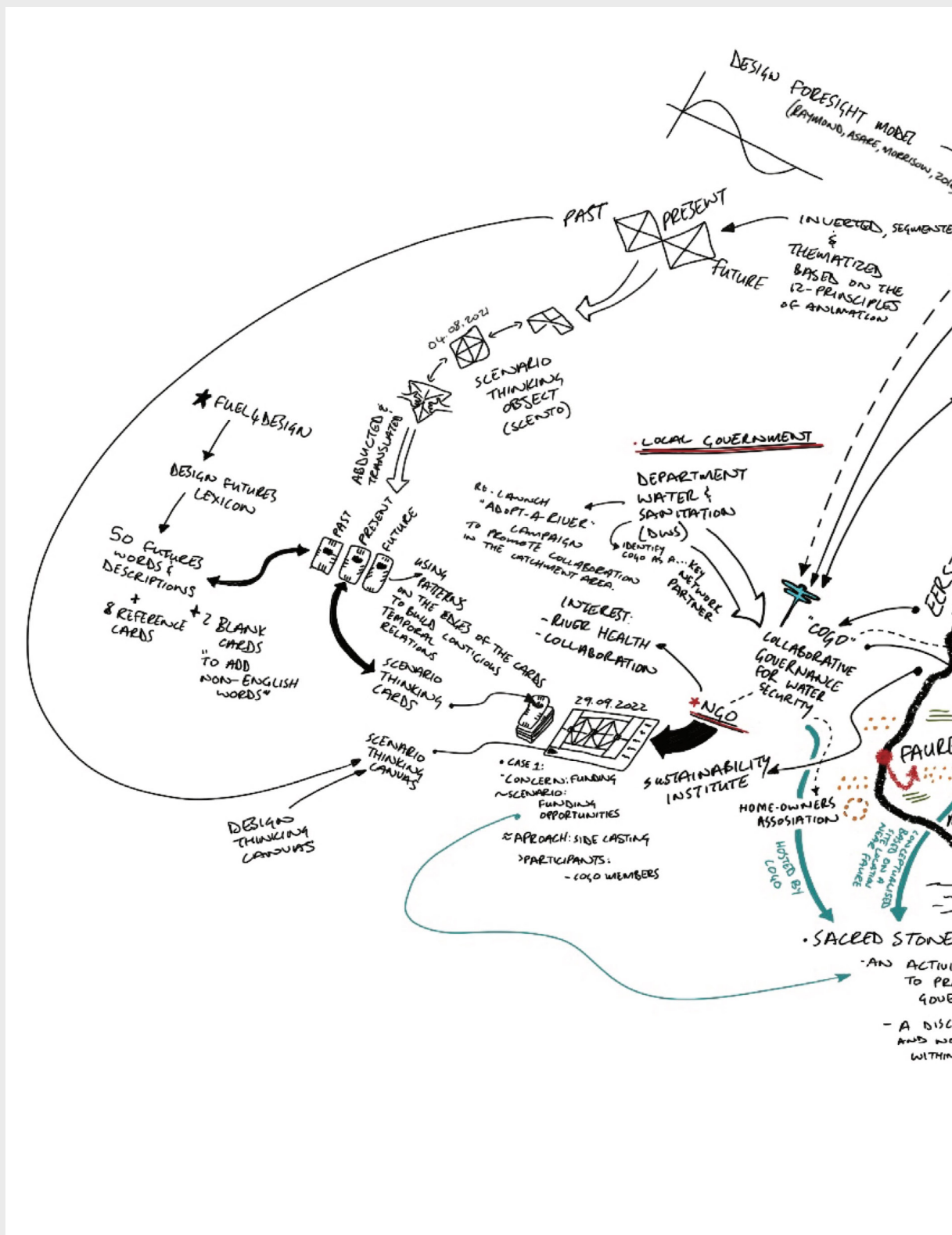
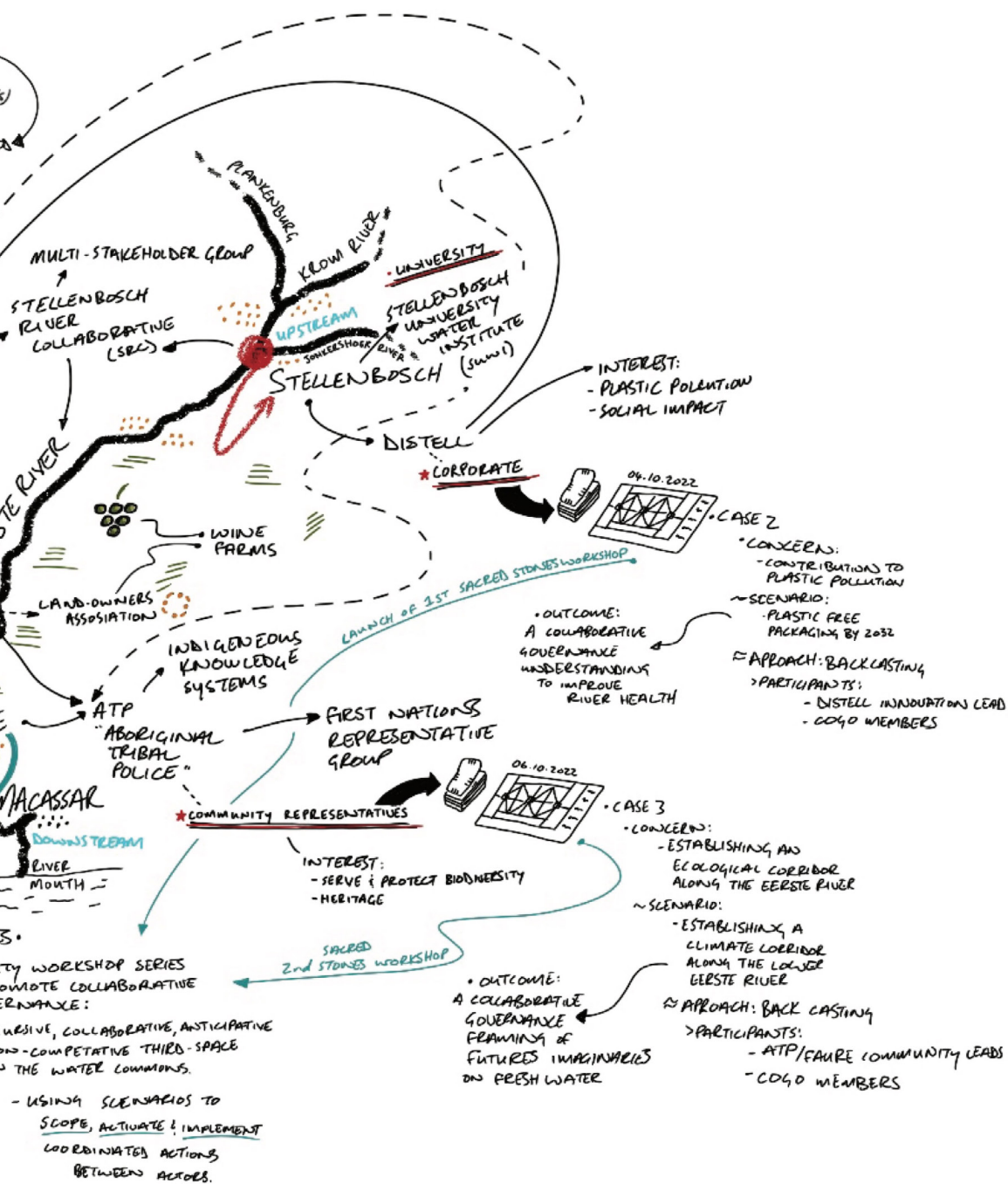


Table 1, below, offers a way to read into the relational lines in Figure 2. It can be used to differentiate between these approaches and should not be viewed as a totalist take on these indicators, but as means to explore further into what may constitute a futures making process by design. Table 1 reflects futuring in the real world by introducing a topological framework that has been informed by the work I have done during my PhD research. The research site is Faure, a historically significant hamlet near Stellenbosch, South Africa, and I have identified participants from local government, local NGOs and an Indigenous First Nations group called the Koi within the Stellenbosch River Catchment area. During my fieldwork I have designed scenario building cards and a scenario thinking canvas as tabletop activity workshop based resources by a mode of play to enrich collective futuring by design. I present this in a process diagram (Figure 3) as a way to complement the topological framework.

Reading the diagram from the left is a reflection on the process of designing the scenario building cards and the scenario thinking canvas. Here you can see how the DESIGN FUTURES LEXICON has informed these resources. The underlined labels indicate key participants during my fieldwork and includes Local Government, an NGO, a Corporate in the Stellenbosch wine sector and community representatives of an Indigenous group. Central to this map is the Eerste River, which runs (Upstream) through the town of Stellenbosch, past wine farms, before passing through Faure and Micassar (Downstream). The three activity workshops that I facilitated are indicated by the bold black arrows as three cases. Each case reflects briefly on the concern that the participants identified as a scenario problematic to explore through playing with the cards and canvas. The three cases also reflect scenario descriptions as well as a futuring approach and the outcome of each scenario. The blue relational lines connect

◀ Figure 1: Schematic overview on futuring in the real world. (Image: Corbin Raymond, 2022).





▲ Figure 3: Field work process diagram.
(Image: Corbin Raymond, 2022).

◀ Figure 4:
Topology
of shared
collective
shaped
futures by
designing
and futuring
approaches.
(Corbin
Raymond,
2022).

Approaches		Designing	Futuring	Methods
Process of Identification	Sourcing	Applying appropriate identification techniques and methods within a given setting that enriches a project's physical, conceptual and contextual depth.	Applying appropriate anticipatory identification techniques that may bring about pluralistic enquiry within a Socio-Ecological-Techno-Economic nexus.	Collaborative Ethnography, Performativity, Enactment, Experiential, Play.
	Resources	Analogue and or digital tools, toolkits, financial capacities, physical and virtual spaces.	Analogue and or digital tools, toolkits, financial capacities, physical and virtual spaces.	
Process of Actualization	Material	Transformable material, tangible and/or intangible, that has been sourced and that can be interacted with by the identified resources.	Conceptual rhetorics that include, but are not limited to, temporal indicators of past, present and future.	
	Trans(form)ation	A morphological practice of material manipulation by artifacting through analogue/virtual modeling.	A practice of sequencing, visualizing, modeling and articulating material that relates to temporal indicators of pasts, presents and/or futures.	
	Materializing	Using design-based skills that include, but are not limited to, visualizing, sculpting and prototyping.	Embedding futures in the present by experiential, explorative, dialogical, narrative, and imaginative modalities.	

to a participative concept called 'Sacred Stones'.

Sacred Stones takes inspiration from a meeting place for indigenous people at the lower Eerste River, near Faure – where this meeting place is believed by the residents in Faure to have been a gathering place for deliberation and decision-making on socio-ecological matters of that time. The Sacred Stones is a three-part workshop format that engages narrative-based discourse on socio-ecological matters between multi-stakeholder participants, here the three-part format focus on conceptualisation, development, and implementation.

Implications for Design Futures Literacies Pedagogy

The genre of Design Futures Literacies word-based, embodied hand-held playing cards were specifically chosen for its affordance of experiential learning by doing. The concept of temporal associations, articulations and contiguous relations are brought forward by the gaming mechanic of match making. This relies on visual literacies to identify patterns and make visual connections through a mode of play. Participants were prompted to discuss any word-based relations that might occur during gameplay to inform discursive, dialogical and narrative-based

collaboration. These associations happened by conceptually articulating and reflecting on word-to-word relations, and pattern recognition across three card sets related to past, present and futures (Figure 4).

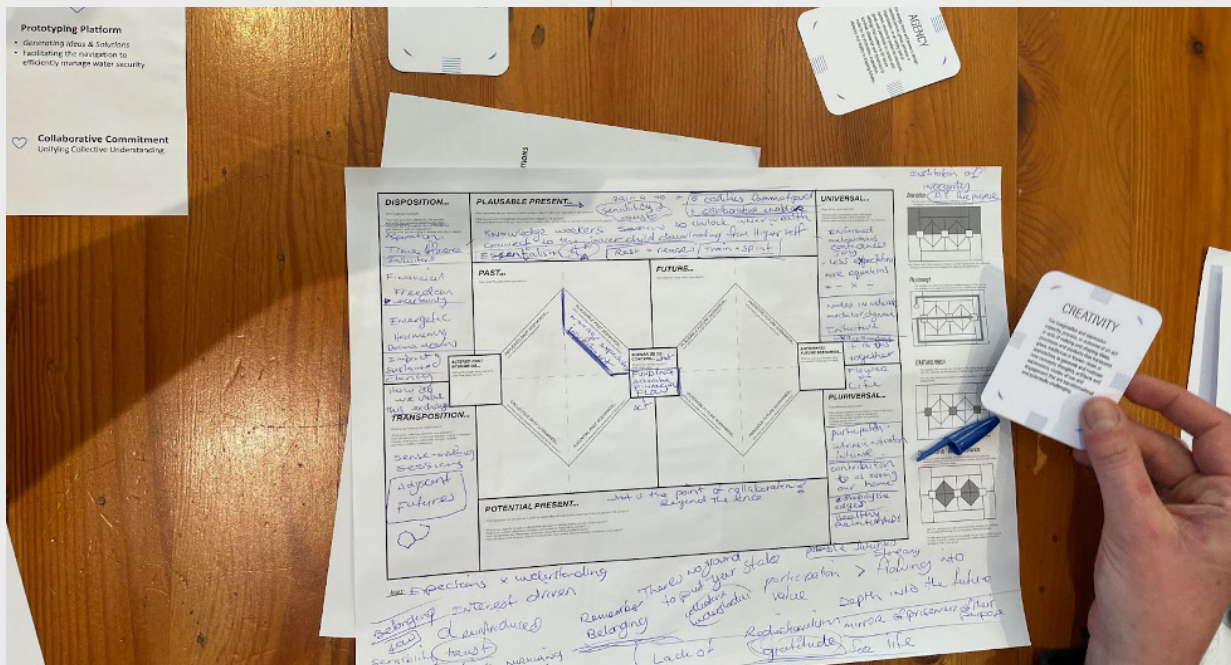
► Figure 5:
Scenario
Building
Cards at
play – Making
relational
assemblages
(Image:
Corbin
Raymond,
2022)



used to prompt annotative transcriptions of the scenario that was being discussed and collectively shaped. This mode of transcription was a way for participants to further articulate their shared futures imaginary scenario on a spatial-segmented canvas that oriented their scenario placed on the back side and forecasting gameplay, across past, present and futures themes.

By participating in this way, a group of Indigenous leaders could reflect on their cultural identity and social role in relation to nature and concepts of conservation, and reposition their focus towards a climate –

► Figure 6:
Scenario
Thinking
Canvas at Play
- Transcribing
discursive
scenarios.
(Image:
Corbin
Raymond,
2022)



By making these associations, participants, deliberately, serendipitously, and reactively learned how to articulate their scenario at play through curated design futures literacies. In the event participants were unfamiliar with the words, they could reflect on the descriptions to deepen, challenge or reflect on their understanding of the word.

While participating in the gameplay, non-designers and non-futurists could engage in meaning - sense -, and place making. The scenario thinking canvas, see Figure 5, was

ecological corridor along the Eerste River, which celebrated their cultural groups, and relation to the environment – in this case, specifically to a river context. The NGO could identify their role in the scenario and together with the First Nations group, have taken this scenario forward in a project case for the international River Cities as Method research project, and have acquired 2 ha of land along the river from a land owner in Stellenbosch land owners association to support this scenario driven intervention.

Amphibious Thematic Scales

EXCERPT FROM: Morrison, A., Kerspern, B., Dudani, P. & Steggell, A. (2021). 'Amphibious scales and anticipatory design'. In *Proceedings of NORDES 2021: Matters of Scale*. 15-18 August: Kolding, Denmark. 171–180. [Link ↗](#)

LOCATION: (Morrison et al. 2021: 175)

OUTCOME: from DESIGN FUTURES LEXICON and AMPHIBIOUS TRILOGIES projects, AHO.

As pliable and reflexive vectoral constructs, the 'Amphibious Scales' have been co-created through transdisciplinary design from practice-based inquiry in design futures literacies, 'extended choreography' and arctic landscapes. They are open to multiple perspectives on context and culture and the force of uncertainty and indeterminacy. Perception is also crucial in scaling world views and practices in terms of fact and fiction; these may be mediated through mixed materialities related to articulations of diverse genres and discourses. Multitemporal and chronotopical multiplicities concern movement (spatial, transversal, poly kinetic). Negotiation involves multisensory experience, a plurality of engagement, offers and prompts for transformations via human agency.

Concerning Design, the 'Amphibious Scales' have been conceptualised within a wider anticipatory design perspective that splices, weaves and knots together research and practise from Speculative Design in Design and from aspects of design and foresight in Futures Studies. From choreography, the scales extend from the rehearsal and performance stage to environmental and

societal ones. On Arctic landscapes, the scales concern the changing nature of maritime- and coastal-scapes as ice and permafrost melts, erosion and extreme weather advance, livelihoods are denuded.

The scales may be understood as a set of amphibious semantic devices (cat's cradles, regenerative arms) and a means to devising (cultural material future-facing resources) for imaginary mappings of anticipatory design futures and related design futures literacies. These scales are posed to suggest ways of 'staying with the trouble' (Haraway (2016) of living, designing, teaching and learning in contexts of local/global change.

1. Scale: Multiperspectival

Theme: Complexity. *Characteristics:* Systems, autonomy, Anthropocene and climate change, esoteric, obscured, dense, profound, enigmatic, flux, shape shifting, rhizomatic

2. Scale: Indeterminate

Theme: Comprehension. *Characteristics:* Uncertainty, intangibility, abstract, remote, Indistinct, unfathomable, unanchored, ineffable

3. Scale: Counterfactuality

Theme: Perception. *Characteristics:* Truth relations slide between fact and fiction, speculative, prospective, reflexive

4. Scale: Mixed materiality

Theme: Mediation. *Characteristics:* multimodal, semiotic, narrative, physical-digital, personas, scenarios, play

5. Scale: Multi-temporality

Theme: Time. *Characteristics:* Multiple timescales, linear to dynamic, expansion, contraction, divergence, disruption, delay, pause, speed

6. Scale: Poly-kinetic

Theme: Movement. *Characteristics:* Friction, fluidity, viscosity, vectors, speed, pattern, spread, diffused, concentrated, connected, osmotic, undulating, jettisoning etc

7. Scale: Pan-experiential

Theme: Negotiation. *Characteristics:* Multimodal embodiment, sensorial, participative processes, serious play

8. Scale: Plural engagement

Theme: Transformation

Characteristics: Action and agency, identifying, recognizing, locating, positioning, shaping, sharing changing futures

▲ Figure 1: 'Amphibious Scales' and Anticipatory Design.

Reference

Haraway, D. (2016). *Staying with the Trouble*. Raleigh: Duke University Press.

Design Futures Literacies and an Expanded Field of Engagement

EXTRACTS FROM: OCTOPA: [Link](#) ↗

The OCTOPATLAS is a narrative experience that offers you opportunities to navigate plural and futures perspectives on the Northern Sea Route, supported by a 'den' of resources.

Jumping from a future fragment to another, let OCTOPA lead you through her atlas to discover unexpected and disruptive situations, based on extrapolations of current stakes and issues for the Arctic Region. From resource extraction to icy warfare, along with Indigenous Peoples' rights and last chance tourism, you will navigate between hopes and fears, opportunities and risks.

OCTOPATLAS is not a contemplative journey: each fiction is a provocative and reflexive prompt, asking you to project yourself in this speculative situation. In between the idea of replaying and counter-playing these provocative narratives, you will have to imagine how you – or your organisation – would have evolved in this situation and then how you would act today in order to adapt or resist when facing those transformations.

The OCTOPATLAS is a call for anticipation, designed to help you in envisaging the complexity and uncertainty inherent to the evolution of the Northern Sea Route, and, accordingly, strengthening your position about these (emerging) stakes.



Through her Toolkit, get familiar with Octopa's many arms abilities to tackle complexity and uncertainty.

I've seen how you humans have responded to my ingenuity, flexibility and adaptability. There's a way to go to join up our aspirations, actions, expectations and assessments of meaningful long-term change.

So, I've come up with some strategies and tactics to help us move forward. I've done this to stress this is about things that emerge, come into being and offer and invite us to be agents of informed and situated change.

This is all about engaging with matters of climate, environment, scenarios and sustainability and propel ourselves into more connected, principled, positioned and purposive action. Ready, steady go!

The workshops are arranged as follows:

1. Imagining
2. Positioning
3. Transforming
4. Reporting

▲ Figure 1: The four activity options in the Toolkit for use in OCTOPA Workshops. [Link](#) ↗



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▲ Figure 2: Example of one scenario selected from the OCTOPATLAS. [Link](#) ▶

▶ ▲ Figure 3: The three rehearsing exercises that support participative use of the resources on OCTOPA's den. [Link](#) ▶

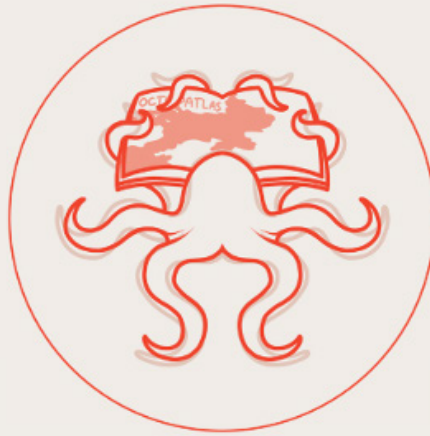
▶ Figure 4: Example of a full scenario (left) with activities (right), selected from options in the OCTOPATLAS. [Link](#) ▶

MY THREE REHEARSING EXERCISES



1. IDENTIFYING

Through her toolkit, get familiar with Octopa's many arms abilities to tackle complexity and uncertainty.



2. EXPERIENCING

Browse the Octopatlas as a reflexive experience to reconsider your futures through the Arctic lens.



3. WORKSHOPPING

Learn to apply Octopa's knowledge and reflexes to your own stakes and challenges.



BACK TO ATLAS

AN ACTUAL COLD WAR

ICE UPON A TIME

The Northern Sea Route has beaten Suez Canal and Panama Canal at their own games. "But do you know what these canals also have in common," Octopa asks. You are about to choose from about a dozen possible answers, but Octopa catches you off guard: the lust of nations once turned these canals into war zones.

Hostilities have been tacitly declared in the Arctic passage. Corporations and nations having interests in the Arctic circle are already operating under false flags. "This is an actual Cold War in the making," Octopa emphasises.

Proxy wars could become even weirder up north. Thieves could sail on stealth icebreakers. Icebergs would be rerouted for blockade purposes. Temporary islands might be created by sinking platforms to claim ownership on territories and resources, as well as to raise fees of passage. Some even talk about rogue wave generators used to restrict portions of the sea route.

No words or actions seem to have the power to halt the warming of this new Cold War.

IN THIS WORLD,
HOW WOULD YOU OR YOUR ORGANISATION
HAVE EVOLVED?

Imagine how your role, activities, everyday life has changed.
You can use the power of Octopa's arms to inspire new ideas:

CONTEXTS ?

QUALITIES ?

AMPHIBIOUSNESS

APPEARANCE

MOVEMENT

TENTACLES

SOCIETAL

MOBILITY

ENVIRONMENT

BRAININESS

DONE IMAGINING THIS FUTURE.
WHAT NOW?



WELCOME TO OCTOPA'S WORKSHOP!

Get on a speculative journey in the Northern Sea Route futures.

HELPERS & HOSTS

Andrew
Bastien
Swan
Lea
Amanda

01. LANDSCAPE

(Workshop leader) Kjerstin
Aniella
Caitlin
Kun
Rebecca

02. LANDSCAPE

(Workshop leader) Kjerstin
Sverre
Bilal
Tale
Karl

03. RITUALS

(Workshop leader) Ted

04. RITUALS

(Workshop leader) Ted

05. RITUALS

(Workshop leader) Ted

06. CHOREOGRAPHY

(Workshop leader) Sverre
Yusef
Hernan
Robynne
Blanca

07. SCENARIOS

(Workshop leader) Corbin
Ammer
Mats
Jordyn
Sofia

08. METHODS

(Workshop leader) Henry
Janike
Manuela
Svein
Ravi
Sahil

DISCUSSIONS SYNTHESIS

DISCUSSIONS SYNTHESIS

DISCUSSIONS SYNTHESIS

CUSTOMIZE

DISCUSSION

01. LANDSCAPE

TOPIC
Map
Field

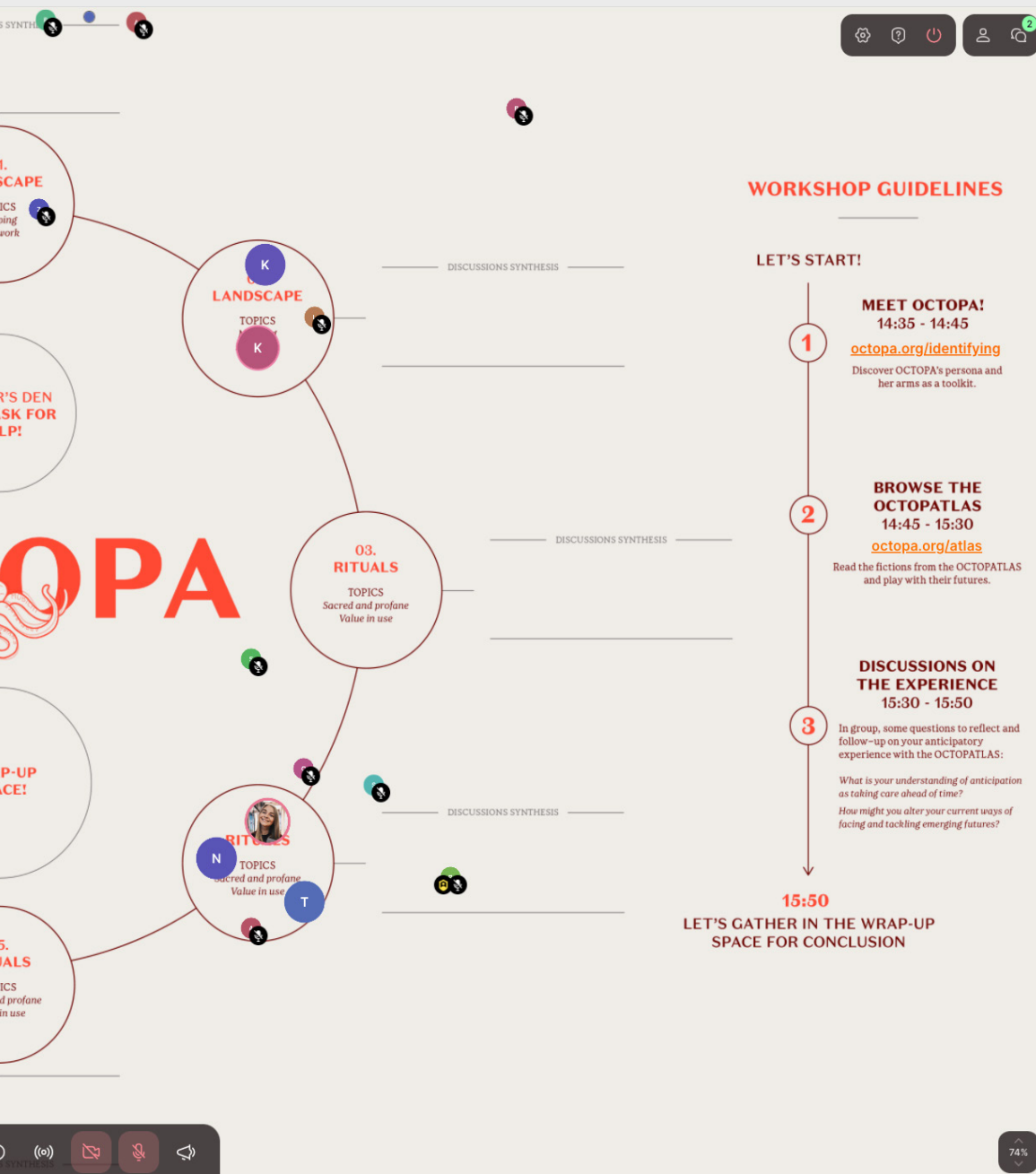
HELPER
COME A
HE

OCTOPA

WRA
SPA

01. RITUALS

TOPIC
Sacred an
Value



▲ Figure 5: Instance of an OCTOPA workshop, with participants from various domains, in and beyond design. The event is mediated via the tool Spatial Chat and through an interface devised by the AHO team in FUEL4DESIGN together with Bastien Kerspern, DESIGN FRICTION / CASUS LUDI).

In our site, we focus on the cultural in systems, anticipatory and strategic communication design that is mediated not only by sets of workshop prompts but through enactments with several different groups of participants within and over several iterations. This we achieved through the development of a workshop interface using the tool Spatial Chat that allows participants to hear one another around a spot or designated location of assembly, together with a megaphone function for plenary speakers.

The workshops included a diversity of students, practitioners and design and art educators, with spatially active interface allowing gatherings and simultaneous locative and movement enacted trans-screen dialogues. In addition to workshops ranging from choreography to service and landscape design, we activated this interface for the final project research presentation at the Oslo hosted track of the *4th International Conference on Anticipation* in autumn 2022 (Morrison, et al., 2022).

Holding design futures actively open

By Andrew Morrison & Palak Dudani

Animating design futures literacies

... I think we can and must become bewildered from where we are. We can begin to redirect our attentions, perceptions, energies, and movements if we ask again, without pretending to know in advance what we'll find or where it will lead us: What is literature? What is literacy? What animates it? How has it animated us? How might it animate us otherwise? (Snaza, 2019: 163).

As we argued in the two chapters on design education in this volume, there is a growing interest in the futures of design education and futures in design education. Recently, for example, in 'Teaching for transformation: Lessons from critical pedagogy for design futures education', Barendregt et al. (2023, in press) accentuate the transformative nature of engaging with futures and design in drawing on earlier critical pedagogy approaches primed by Freire and the like in the learning sciences.

In FUEL4DESIGN we have followed similar paths and argued for a critical-creative twist to the entwined relational character of design learning in flux [Figures 4]. This relational anticipatory pedagogical activity is being re-configured through complex, emergent and exploratory experimenting with a rapidly changing and challenging physical and eco-political world in which we live, work and learn. These transformations are unavoidably ethical, systemic, co-constructive and political.

Here the words of Snaza (2019) on motivating for 'animate literacies' apply well to an anticipatory design education and are worth quoting at length as they too accentuate that educational, professional, societal and ecological transformation is agile, animate and elaborate. He writes that:

Figure 4 ►
Discussions in
working with the
'Atlas of Weak
Signals' physical
kit, Master's
in Design for
Emergent Futures
(ELISAVA, IAAC).
(Image credit: Fab
Lab Barcelona.)



I want to suggest that literacy events and the situations from which they emerge — as the collective touching of agencies and entities involving semiosis — are always political. Their politics lie not in representational practices — for those constitute only the most minuscule portion of the affects and effects of literacy—but in their role in distributing and regulating movement. As captured by the state, literacy becomes a way to segregate bodies, restricting most movement in order to channel energies along paths amenable to the functioning of Man (and state/corporate investment strategies that seize on attention and perception). Animate Literacies would pursue other directions, valorizing literacies against the state. I want to sketch some of the contours of these literacies now, but I want to insist that they are always and of necessity proliferating, mobile, excessive, and ephemeral. There is no plan for a literacy against the state, for that would already fall back into the state's logic. (Snaza, 2019: 146–147)

In taking up the notion of otherwise prevalent in pluriversally-oriented cultural, educational and communicative studies and practices, the political in design futures is unavoidably impacts on design futures literacies. Many of the key matters raised in this chapter acknowledge and accentuate that design and futures in design learning must continue to examine and power, representativity, knowledge resources and systems and continuing challenges to our human capabilities and capacities.

These are matters that need urgent attention and principled action to build the long-term commitment needed to anticipate and to engage in difficult transformative design futures practices – for the profession, for design universities, for pedagogies, practices and wider policies for deep and long lasting change.

Towards achieving pluriversal design futures learning

In working towards a transformative futures-oriented 21st-century design education, and ones that follow, it is helpful to remember that futures are always ethereal. They are glimpsed and surmised in between our present contexts and our willingness to critically appraise our histories. They lure and puzzle us as we seek them out through designing and as if a force in their own interrupt and enrich our current contexts as we look beyond them in pursuing and waiting out the workings of imaginative and informed design constructions and collaborative explorations.

Design futures, as emergent phenomena, socio-technical imaginaries and unintended and unexpected things in their own right, are pluriversal. Manifold too are they in their intertwined trans-temporal character and manifestations as we learn how to work with them with chronotopical materialities that can only be fathomed further by venturing beyond the known and retrieved, the given and the stable. This asks that we remain open to the potential and the possible as we learn how to work further still with curious and critical tentativity and even subjunctive absurdity as means to rethink how we know and learn and whose experiences – human and more-than human - might already facilitate its realisations in-the-no and for the long view.

In proposing otherwising as a specifically design engaged and exercised mode of imaginary, pragmatic, distributive, non-hierarchical global knowledge sharing and building, the *Pluriversal Design Special Interest Group* in the Design Research Society (DRS) sets out key markers for satisfactory achievement. The Group states that:

We will recognise when we are successful when:

- a. There is a greater participation within the DRS, including in other SIGs, of designers from outside of mainstream design practice.*
- b. There is a recognition of the importance of the multiple perspectives within design research, including those of people from colonised or oppressed parts of the world.*
- c. There is greater recognition of and interrogation of historical hegemonic power imbalances within design research.*
- d. There is a 're-orientation' of design to incorporate multiple perspectives and views and a focus on multiple ways of doing and understanding design.*

The Pluriversal Design SIG, Design Research Society (DRS); [Link ↗](#).

Re-orienting design is a large, demanding and ongoing activity that depends on multiple actors, views and actions. Related design education that incorporates futures as a key shift in its transformative pedagogies offers some means to achieving the dynamics between design, learning the professions and other domains of education, inquiry and practice. We see design universities as key sites and dynamic collaborative venues for shaping futures through critical-creative designing. They offer us spaces for devising different, anticipatory infused curricula. They provide spaces for socio-technical, ecological and economic political experimentation in and as learning in which teaching, research and industry and community partnerships engage in learning how to reframe

design and its inherent propulsive character while underpinning attention to futures with critical, reflexive and recursive realisations of interlinked knowledge making, querying and exchange. We write this as colleagues who have collaborated closely over the years of the FUEL4DESIGN project and its extended reflections.

While we were born, educated and worked in the Global South we have also studied, worked and live in the global north. We see much to be gained for design universities - in teaching, learning, research, partnering and outreach - in pursuing wider, global, open and plural anticipatory design educational otherwisings that is active, situated, shared, care-full, critical and creative. In our own close dialogues and querying and queering exchanges we have found this to be demanding and enlivening. We have seen it happen between others and in projects and students' learning and in work with organisations and communities in which our colleagues near and far participate. We see a need to expand the range and content of resources and analyses to which we refer.

For example, concerning design ecologies and multispecies, the work of the Indian scholar Radhika Govindraj (2018) in her book *Animal Intimacies: Interspecies relatedness in India's central Himalayas*, shifts not only the geo-environmental location of learning to understand human and non-human existence but it situates this in age-old cultural customs and respect for biological contexts while problematising nationalist arguments in what she terms a 'decidedly uninnocent' exploration of knotted relations.

Our design curricula across the globe could do so much more to infuse its change processes with inputs, whether via online talks or extracts from lengthy books, to motivate our students and to propel ourselves as design educators to see global knowledge as wealth and as offering abundance for transforming design learning for long-term, planetary transformation. Local expertise, situated close studies and modest proposals and exploration must also continue to play a part in wider systemic shifts to now only how but also why our design curricula are the way they are and might become and keep being. It takes work, energy and networking to build more diverse curricula; yet they will not be refashioned, as it were, unless we are also curiously committed to knowing and learning otherwise.

The ongoing global crises and the weariness and challenges design education faces following the global pandemic mean that we also need to take care - conceptually, pragmatically and ethically - in designing learning spaces and activities and to support engagement and pathways for anticipatory design education. In Volume 1 of *Design Futures Literacies* we have questioned why higher educational design institutions have not more systemically addressed the deep issues and needs of re-orienting design to meet 21st century concerns. We have offered a range of ventures through one design education project which we have drawn on to heuristically suggest potential and actual pathways towards relationally re-framed design futures literacies and pedagogies. The extended essays that comprise Volume 2 present further accounts and reflections on our own pedagogical practices along with student projects. This is supported with reference to wider research in an offering of re-positioned anticipatory design ontologies and epistemologies. These too need to refer back to matters otherwise

and the proposal for engaging in wider, co-creative critical otherworlding outlined here. This is a much larger, global design education project and one already being taken up in diverse venues and publications, such as *Modes of Criticism 4 Radical Pedagogy* (Laranjo, 2019) and in the edited collection *Design Struggles* (Mareis & Paim, 2021).

Going fallow, asserting vibrant design futures together

In their piece ‘Life, life support and the afterlives of (im)possible worlds’, Maja Kuzmanovic and Nic Gaffney (2022) from the group *fo.am* reflect on decades of shared engagement with materials, processes and engagement in explorations of the ecological, human, technical and imaginary. Their work is a key example in the collection entitled *Futures Brought to Life: From immersion via agency to engagement* curated by the collective *Time’s Up*. Kuzmanovic and Gaffney (2022) suggest that, in the ongoing fray of challenges and activities round working to bring sustainable futures to life, we might also need to consider also generating a refuge to support the genesis of alternative futures beyond the flurries of the present.

This is a present and a projected worlding that is permeated by bureaucratic formations and meta categories of marking complexity, such as the prevalence of the term VUCA (volatility, uncertainty, complexity, and ambiguity) that may be countered in critical-creative acts of otherworlding such as through RADMIN ([Link ↗](#)). In their view – one that may be seen as a mode of ‘otherworlding through design’ – Kuzmanovic and Gaffney (2022: online) write that:

Along with scenario building, future prehearsals, and RADMIN interventions we might resort to strategic unplanning, VUCA therapy or targeted situational awareness to reduce acute symptoms. The time-honoured techniques of running away, hiding, and giving up will also be discussed. In situations of global instability (such as a war or pandemic), we may need to apply palliative, rehabilitatory or emergency approaches to becoming comfortable with uncertainty. When circumstances become too hostile, we might need a sanctuary (or sanatorium) for alternative futures, the unattainable, the unwanted and endangered futures that cannot exist in the present. A seed bank. A refugia. A nursery for propositions to germinate. Sometimes, bringing futures to life (or back to life) can benefit from a position of remove. Sometimes, our possible futures may need a refuge from the world. Sometimes, they may need another world.

Design futures literacies and their related and self-reflexive, generative and recursive pedagogies are dynamic, ongoing and intentionally transformative ventures and emergent practices that are oriented towards shaping futures by design and learning futures in designing. They too need to go fallow and to challenge themselves in fundamentally regenerative acts of designerly future-oriented flourishing that may need to take place in new, differently designed spaces and processes. These are venues and acts that demand design, pedagogical and research creative criticality and courage in their pursuit and performance in continuing to venture together towards shaping design futures learning. For design schools, design professions and research partnerships these are shared and not-siloed design futures literacies that are

needed as we work towards enriching our alternative presents and long-term visions and policies to motivate and to support shared enactments of different and ethical pragmatics presents for long-term sustainable futures.

Such anticipatory design otherwising as activity needs to be fuelled not only by apposite and astute use of techniques tools and reframing of affordances and reflexive and recursive reassessments of uses and practices in motion. What, how, for and with whom we define and build futures will need watchful, attentive and critical assessment. Who will ensure and engage these matters hugely. The projected and recursive nature of design futures, and the danger that we again position ourselves as visionary guides and 'captains', may lead us into further narrow straights or treacherous shallows where socio-technical and cultural-ecological imaginaries may run around.

We are only beginning, in design education, to systemically navigate and appreciate design pluriversity and for design futures literacies to be charted and emboldened through their global enactment, with local specificities and cultural assertions that are not mapped in earlier often western modernist logics and systemic inheritances that reproduce rather than release needed energies and shared ingenuities. We cannot fall into new traps of western design schools reifying indigenous knowledge systems (e.g. Grande & McCarty, 2018) and watching their co-option into curricula, we cannot deploy tool kits, and especially futures one and those we are still to fashion and fabricate, without unpacking the values and dynamics they afford and construe through the uses they script. Situating design futures in our pedagogies and project-based and process-rich learning asks that we pay greater attention to its origins and destinations and to its stakeholders and participant partners, audiences, users and the wider systems and actors with whom it is realised and for whom it has lasting and, hopefully, positively enduring vibrant impact and open effects.

In a special journal issue on time travel, Goddu (2021) uses the term 'otherwising' to discuss revisionism of the past and a mode of avoiding arguments for its strong annulment or replacement through temporally motivated change directed from the present. Where the past is in effect 'closed', the future remains 'open'. This status offers design futures literacies and pedagogies spaces, means, activities and engagement as design potential resources and is a call to action. However, a perpetually open future may leave us perplexed as to what to do and unable to take part on shaping it critically and creatively by design. To do so requires choices, co-ordination and communicative enactment, just as in any design project. What is alluring about design futures is that it asks us to at least consider the possibility of alternate futures, perhaps less constrained by contemporary tie-ins and seemingly intractable problems and their institutional and structural constraints. These open futures are offerings and spaces - cultural, imaginary, socio-technical, more-than human - for ongoing ventures into critical-creative relational and anticipatory learning together otherwise. Futures-in-design education awaits further development and designing so that we exercise agency in our teaching and learning and, to learn how to work in wider ecological and economic political systems change that builds and critiques design futures literacies in-the-making and through together making design learning differently.





▲ 'Atmospheric Rainmakers harvesting freshwater for arid regions'. Image by Gautam et al., (2053). Figure 12: from Joseph, J. (2022). *The Open Journal of Refuturing*. Centenary Special Issue, Spring 2131. p. 93. (Open Design Society: Oslo). This journal is an integral creative critical practice in Jomy Joseph's doctoral thesis at AHO, (Joseph, 2023). Both texts are available here: [Link](#) ↗

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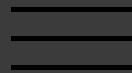
APPENDIX PARTIC

DICES.

IPATING

APPENDICES.
PARTICIPATING

ACKNOWLEDGE -MENTS





AHO

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ELISAVA

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PoliMi

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UAL

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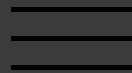
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APPENDICES.
PARTICIPATING

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 Journal* and *The Strategic Design Journal*. More information is available on her work [website](#) ².

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 GLZ

(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 sociotechnological 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 (I06). 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 transdisciplinary 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 humanities and social and computational sciences. His recent research is in Anticipatory Studies and design relational 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. He was 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 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' 1, in *Proceedings of DRS2022: Bilbao*.

Karianne Rygh has contributed to FUEL4DESIGN as an editor and researcher through work package I06 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 health care ecosystems'. In Pfannstiel, M. et al. (Eds.). *Service Design Practices for Health Care Innovation*. Cham: Springer. 77–114.

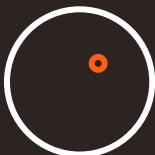
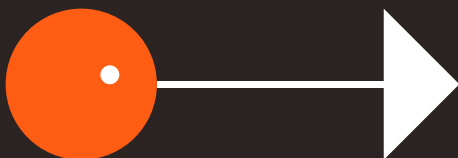
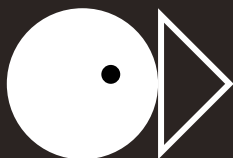
Jerneja Rebernak worked as Project Manager for FUEL4Design and is currently responsible for the research management of the Transforming Collections: Reimagining Art, Nation and Heritage 2 project, a large UKRI Arts and Humanities Research Council's Towards a National Collection 2 programme delivered 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

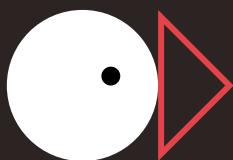
Slovenian Ministry of Culture. In 2015, she joined the Research and Knowledge Exchange Departments at UAL advising on European innovation funding and has managed several European cooperation projects among others T-Factor (Horizon 2020), Fashion-Tech Alliance, Edu4Fashion Tech, FUEL4Design (Erasmus+) 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), contextualised 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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