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Proceedings of Nordes 2023: This Space Intentionally Left [Blank]

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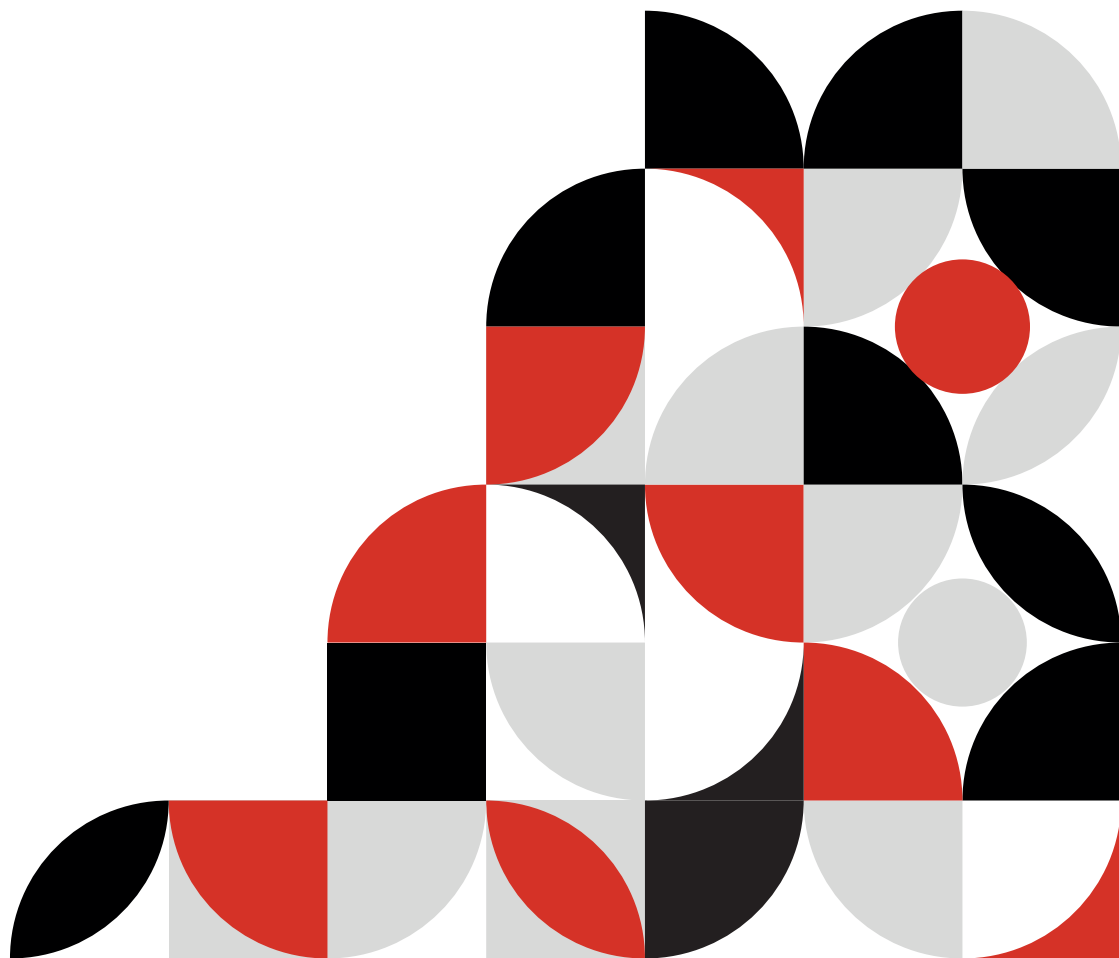
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Proceedings from the
10th Nordic Design Research Conference
Norrköping 12-14th June 2023

Edited by
Vanessa Rodrigues, Carl Westin, Stefan Holmlid





Proceedings of Nordes International Conference

12-14 June 2023, Norrköping

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About NORDES

Between June 12-14 Linköping University in Sweden is hosting the 10th biannual Nordic Design Research Society (NORDES) conference. Established in 2005, the society is an informal network of individuals interested in design research. Nordic higher education institutions self-organize and host alternating biannual conferences and summer schools on a voluntary basis, with the location rotating among the Nordic countries. To express interest in hosting, individuals may contact the NORDES board or attend the open 'Commons' meeting held at each NORDES conference.

NORDES ascertains access to its publication and dissemination of design research through the NORDES Digital Archive (<https://archive.nordes.org>) and the Design Research Society (DRS) Digital library (<https://dl.designresearchsociety.org>)

More information about NORDES 2023 can be found on <https://nordes2023.org>.

Making Design Matter

4th Nordic Design Research Conference 2011
May 29-31, Aalto University, Helsinki, Finland

Engaging Artifacts

3rd Nordic Design Research Conference 2009
August 30-September 1, AHO, Oslo, Norway

Design Inquiries

2nd Nordic Design Research Conference 2007
May 27-30, Konstfack, Stockholm, Sweden

In the Making

1st Nordic Design Research Conference 2005
May 29-31, Royal Danish Academy, School of Architecture, Copenhagen, Denmark

PREVIOUS CONFERENCES

Who Cares?

8th Nordic Design Research Conference,
3-6 June 2019, Aalto University, Espoo, Finland

Design + Power

7th Nordic Design Research Conference 2017
15-17 June 2017, AHO, Oslo, Norway

Design Ecologies

6th Nordic Design Research Conference 2015
June 7-10, 2015, Konstfack, Stockholm,
Sweden

Experiments in Design Research

5th Nordic Design Research Conference 2013
June 9-12, 2013, KADK, Copenhagen, Denmark
& Malmö University, Sweden



Welcome to Nordes 2023

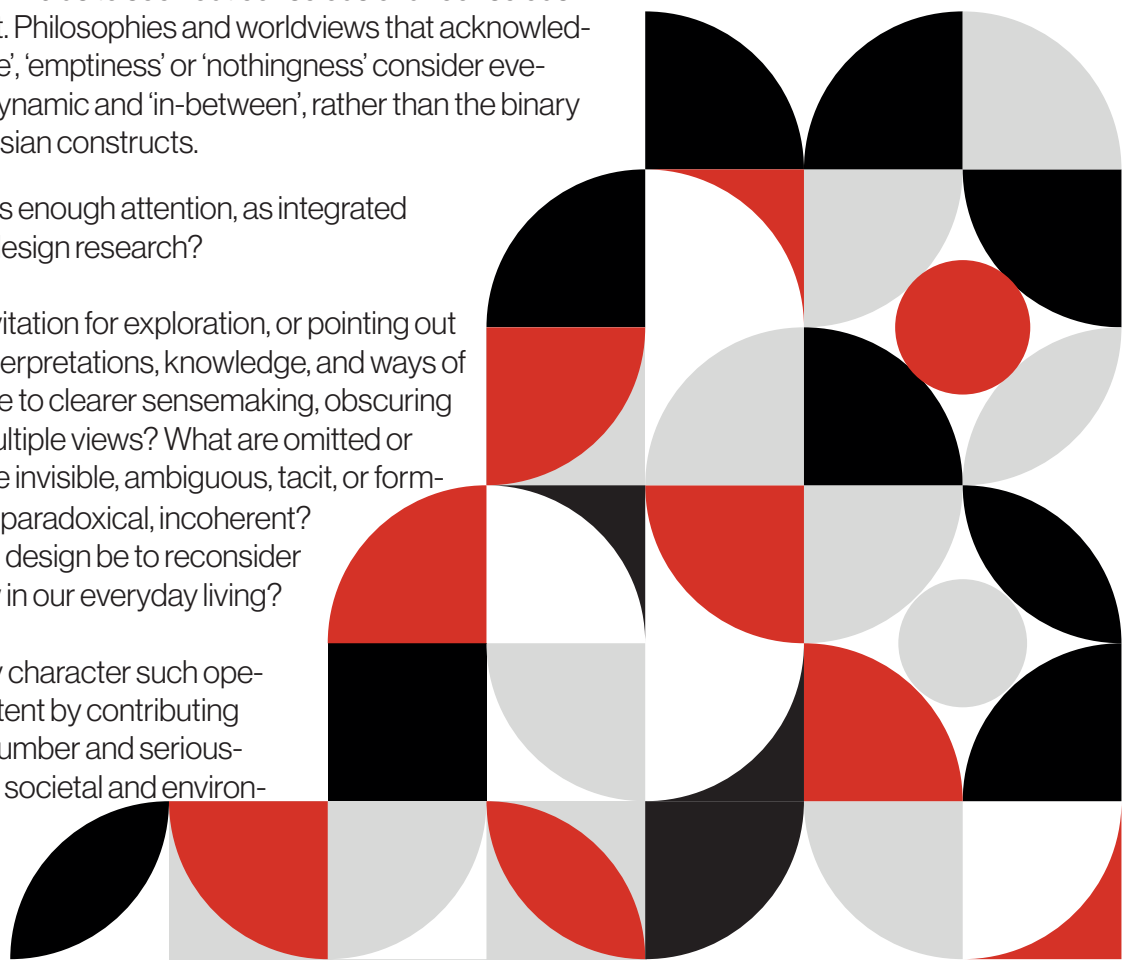
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A blank space—a silence, pause, interstice, gap, in-between, opening, punctuation, negative space—can be deliberately or incidentally devoid of content. A space left blank is as much an invitation to notice the void and the structure that surrounds it, as it is a question as to why and how they are perceived. Such absence can remind us to seek out conscious or unconscious intentions hidden in plain sight. Philosophies and worldviews that acknowledge the importance of 'absence', 'emptiness' or 'nothingness' consider everything to be relational, fluid, dynamic and 'in-between', rather than the binary dualism that linger from Cartesian constructs.

Do we pay these blank spaces enough attention, as integrated parts of design practice and design research?

A blank opening can be an invitation for exploration, or pointing out areas in need of alternative interpretations, knowledge, and ways of being. What resistance is there to clearer sensemaking, obscuring the messy co-existence of multiple views? What are omitted or unnoticed dimensions that are invisible, ambiguous, tacit, or formless, or dismissed as passive, paradoxical, incoherent? How ready and receptive can design be to reconsider values and patterns we follow in our everyday living?

Research conferences are by character such openings, until they are given content by contributing researchers. Looking to the number and seriousness of current and emerging societal and environ-





mental challenges there is a need for allowing many undirected thoughts and research results to be communicated and discussed. Nordes 2023 intends to be such a place. A conference shaped by the research results, avenues, strategies and concerns of its community.

Both full and exploratory papers underwent a rigorous double-blind review process conducted by researchers. The workshop submissions were thoroughly reviewed, by the workshop committee, while the Doctoral Consortium (DC) submissions were carefully examined by the dedicated DC committee and through an engaged peer-review process.

Out of a total of 75 submissions, 25 full papers were accepted, demonstrating their high quality and relevance. Similarly, among the 57 exploratory paper submissions, 21 were deemed suitable for inclusion based on their innovative and promising content. 6 workshop proposals were selected out of a pool of 36 submissions, showcasing their significance and potential to enrich the conference experience. 45 doctoral students have undergone an intensive doctoral consortium process spread over 5 months to develop short papers and present their work at the conference. Additionally a rich set of exhibits are presented at the conference, complementary to work presented as well as free-standing exhibits.

A conference is a celebration to all the hard academic work that has been put into writing proposals, planning, doing empirical and conceptual work, analysing, writing, reviewing, re-writing, being accepted or rejected, presenting ... Organizing a conference is to create the possibilities for such a celebration, and it is has in this instance been made possible by reviewers, scientific committees, organizing committees, exhibition producers, student volunteers, session chairs and the Norrköping Campus of Linköping University.

Lets celebrate!

Vanessa Rodrigues, Carl Westin, Stefan Holmlid
General Chairs for Nordes 2023

Original call for contributions

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The following contributions were invited to the conference

- Full papers
- Exploratory papers
- Workshops
- Doctoral consortium

All submissions were subject to a pre-review process carried out by the chairs that allowed desk-rejects of incomplete or unfitted submissions and ensured coherence between the paper and submission category. Full and exploratory papers and workshop proposals were subject to double-blind peer review, where external reviewers did not know the identity of authors and authors did not know the identity of external reviewers. The review process followed a single round of submission, review, and notification of review results, followed by a process of preparing the manuscript for publication.

Accepted full and exploratory papers, as well as workshop descriptions, will be published through the online DRS Digital Library and Nordes digital archive. Publications will be available as open access during and after the conference. Additionally, a selection of the best full papers will be offered the option to appear in an edited volume in the Springer series Design Research Foundations: <https://www.springer.com/series/13775>.”



CALL FOR SUBMISSIONS NORDES 2023

THIS SPACE INTENTIONALLY LEFT BLANK

The 10th Nordic Design Research Society (Nordes) conference
www.nordes2023.org
Hosted by Linköping University, Sweden
June 11 – 14, 2023

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SUBMISSION FORMATS

To build the conference we invite the following contributions:

- Full papers
- Exploratory papers
- Workshops
- Doctoral consortium

All submissions are subject to a pre-review process carried out by the chairs that allow desk-rejects of incomplete, unfitted submissions and ensure coherence between paper and submission category. Full and exploratory papers and workshop proposals will be subject to double-blind peer review where external reviewers don't know the identity of authors, and authors don't know the identity of external reviewers. The review process follows a single round of submission, review and notification of review results followed by a process of preparing the manuscript for publication.

Submit papers at <https://easychair.org/conferences/?conf=nordes2023>

Accepted full and exploratory papers, and workshop descriptions will be published through the online DRS Digital Library and Nordes digital archive. Publications will be available as open access during and after the conference. Furthermore, a selection of the best full papers will be offered options to appear in an edited volume in the Springer series Design Research Foundations: <https://www.springer.com/series/13775>

IMPORTANT DATES

Deadline Full and Exploratory papers: December 12, 2022

Deadline Workshops & Doctoral Consortium contributions: January 30, 2023

Notification to authors: March 20, 2023

Final contribution submissions: April 10, 2023

Registration opens: April 10, 2023

Early bird registration ends: May 15, 2023

EARLIER CONFERENCES

Papers from and material about earlier Nordes conferences can be found through www.nordes.org and DRS digital library <https://dl.designresearchsociety.org/nordes/>



FULL PAPERS

FULL PAPER CHAIRS

Dag Svanaes, Maarit Mäkelä, Peter Gall Krogh, Yoko Akama & Åsa Wikberg-Nilson

THEME

Blank spaces offer time for thoughtfulness, pauses, alternative paths or even chance to appear. They may come consciously, sub-consciously or by happenstance. Do we pay these (...) enough attention, as integrated parts of design practice and design research? Given the number and seriousness of current and emerging societal and environmental challenges, there is a need for allowing many undirected thoughts and research results to be communicated and discussed. Full papers are welcome in any relevant design topic and can be inspired by the overall conference theme.

SUBMISSION

This submission category invites original and mature research and results positioned in relation to existing research literature. Full papers represent the current frontier of knowledge in the design field. When accepted for review each submission will receive a minimum of two peer-reviews addressing strengths, weaknesses, originality, and significance of the submission. If the submission is accepted for publication authors are expected to adopt suggested improvements as noted by reviewers and the conference program committee.

Full Papers should be limited to maximum 10 pages including abstract but excluding references. Make sure to limit the file size to 5 MB or less, use the Nordes template and follow the submission guidelines for preparing your submission. For further inquiries on the submission category please contact the chairs. Submit papers at <https://easychair.org/conferences/?conf=nordes2023> at the latest December 12th.

EVALUATION

Full papers will be reviewed based on:

1. Curiosity and expansion: The conference aims to invite curiosity and expansiveness in interpreting its theme. Authors should aim to explain their interpretation of the theme clearly to enable reviewers to make sense of the contribution for the design research community.
2. Originality and rigor: Originality is understood as the extent to which the output introduces a new way of thinking about a subject, is distinctive or transformative compared with previous work in the design field. Here, rigor is understood as the extent to which the purpose of the work is clearly articulated, an appropriate methodology for the design research area has been adopted, and the documentation presented shows that the purpose has been achieved.
3. Clarity and communication: Clarity is understood as a clear focus of the paper. Communication is understood as the ability to communicate the focus in text, visuals and other means.

EXPLORATORY PAPERS

EXPLORATORY PAPER CHAIRS

Johan Redström, Peter Vistisen & Signe Louise Yndigegn

THEME

We invite the submission of exploratory papers that address the overall theme of Nordes 2023 Conference, THIS SPACE INTENTIONALLY LEFT BLANK.

Design depends on explorations and experiments. There are numerous reasons why an excellent contribution to Nordes might not fit the comprehensive format of full papers, intended scope and length being just two of them. To open up for a broader range of contributions, ideas, critiques, designs, and more to be shared, we need to leave aspects of the formal format intentionally blank and invite papers that are exploratory.

SUBMISSION

For these contributions, we have the exploratory papers, where we invite submissions in forms such as, but not limited to, design cases, design fictions, design critiques, annotated portfolios, as well as more traditional short papers. Whether text-driven or visual, submissions will differ in format not because of preference or convenience, but because each seeks the most effective way of presenting the intended contributions to the conference. While exploratory, this is still a research paper category. We ask authors to use the Nordes template as a basis, and we strongly recommend exploratory papers to be no longer than 3000 words. The primary mode of archiving and circulating these papers will be as PDF files, and the technical constraints given include a maximum file size of 5 MB. Submit papers at <https://easychair.org/conferences/?conf=nordes2023> at the latest December 12th.

EVALUATION

Submissions will be reviewed with respect to novelty and quality of the research contribution, the consistency, clarity and effectiveness of the presentation, and the contribution paper's relevance for the conference theme. There will be a double-blind review process, and accepted papers will be published in the digital archive. As part of building the Nordes research community and the formats of exploratory papers, we will ask scholars who submit papers to also review others work.



WORKSHOPS

WORKSHOP CHAIRS

Jörn Christiansson, Josina Vink & Julia Valle Noronha

THEME

Nordes workshops in 2023 will translate the theme of THIS SPACE INTENTIONALLY LEFT BLANK into playful explorations, dialogues and emergent possibilities in practice. What unfolds in spaces free from prescription, in the in-betweens, in the absence? How might collective, practice-based design experiments aid us in exploring the relational, fluid, dynamic and invisible aspects that are often ignored?

Embracing blank space opens up opportunities for workshops to embrace uncertainty, unknowns, open-endedness and make way for plurality and possibility. What will happen in the void, in the silence, in the emptiness of time and space? The intended outcomes from workshops are expected to be concrete shared experiences with explorative design activities, that can inform or inspire future design research and practice. We invite workshops that explore these and related themes to push the boundaries of design practices and research in its attentiveness to blank spaces.

SUBMISSION

Workshop proposals need 2 components: a Workshop Description and a Practical Overview. The Workshop Description frames the direction of the exploration, its significance and relevance, as well as the research basis for the workshop. This will be included in the Nordes 2023 Proceedings as a peer-reviewed publication. Use the Nordes paper template. The Workshop Description must be a maximum length of 3 pages excluding references, and a maximum file size of 5 MB.

The Practical Overview is submitted in addition to the workshop description. This provides a summary of the practicalities for running the workshop. Please include in the overview the workshop title; motivation; length of the workshop (we suggest a half day or a full day in-person but will also consider online workshops); a tentative program; a minimum and maximum number of participants; anything participants need to bring; preferred set-up (including space, equipment, supplies, etc.); support needed (technology, materials or other assistance). Please note how you will deal with any related ethical issues, consent and data privacy.

Submit papers at <https://easychair.org/conferences/?conf=nordes2023> at the latest January 30th.

EVALUATION

Workshop proposals will be evaluated based on the following criteria:

1. Experimental nature: Exploration of a novel and compelling aspect of design research and/or practice that challenges the current boundaries of the field and reveal ways of knowing and being that emerge from the blank space or are otherwise overlooked.
2. Clear planning: The goals, structure and plan for the workshop are clearly presented with explicitly stated expectations regarding resourcing and realistic support needs.
3. Research basis: Evidence of scholarly positioning in a relevant area of design research; connections drawn between practical explorations in the workshop and theoretical concepts and implications.

DOCTORAL CONSORTIUM

DOCTORAL CONSORTIUM CHAIRS

Abigail Durrant, Brendon Clark and Jonas Löwgren

The Nordes Doctoral Consortium offers PhD students the opportunity to learn more about and develop richer connections to the international design research community. Participation seeks to give you an enhanced conference experience through connecting your own research to the conference and community, and to a cohort of PhD students. The Doctoral Consortium is a six-month process of collaborative, discursive knowledge production leading up to the conference where the Doctoral Consortium participants engage with design researchers and scholars. Completing the process qualifies for 3 ECTS credits.

SUBMISSION

To participate, you are invited to submit a short position paper relating your PhD research to the Nordes community and the conference theme THIS SPACE INTENTIONALLY LEFT BLANK. The deadline for the initial submission is January 30, 2023. The position paper should be no more than 500 words and contain the following elements:

- A summary of your PhD project;
- A discussion of how it relates to, or how you would like it to relate to, the Nordes design research community;
- A description of short-term and long-term plans for the continuation of your PhD project.

Here are some tips for writing your position paper:

- Refer to the general Call for Participation for inspiration if you find it productive.
- Think of the initial submission as the start of a conversation with peers from the design research community.
- And, of course, engage your supervisor(s) in thinking about what you want to get out of the Doctoral Consortium and how you could shape your initial submission.

Submit position papers at <https://easychair.org/conferences/?conf=nordes2023> at the latest January 30th.

EVALUATION

We review your submission for suitability to the Nordes design research community and the conference theme. Accepted submissions are assigned to roundtable groups where we aim to find common themes with a mix of disciplines, research methods and stages of progression.

PROCESS OVERVIEW

During Spring of 2023, the consortium chairs will facilitate two remote roundtable sessions for working together on developing the position papers through reviews, discussions and revisions. In the course of the roundtable sessions, you will also develop an [intentionally blank], serving as a complementary representation for design research communication. This might be a representation of the material practice of your research, for example, or an experiment with more expressive media and materials to complement the text-based conventions of academic communication.

At the conference, the Doctoral Consortium will have sessions in the main conference program and open to the general conference audience. In one of those sessions, you will present your position paper and complementary representation in a structured and concise format, followed by a personal reflection on your learning process during the Doctoral Consortium and your development as a design researcher.

Completing the process qualifies for 3 ECTS credits. Final position papers (and complementary representations, as far as possible) will be compiled in a Nordes Doctoral Consortium 2023 booklet.



PROGRAM OVERVIEW

The sessions during the conference were organized in four themes. The themes were conceived bottom-up based on the submissions to the conference, and were used as framing at the conference, and as a support to navigate the conference content and contributions.

Craft] __ [Sustainability

This theme explores various aspects in-between sustainability and craft, highlighting interesting tensions and overlaps between the two topics. The theme can highlight tensions between e.g. tradition and innovation, aesthetics and ethics, local and global, as well as the individual and collective. The theme underscore the importance of finding a balance between sustainability and materiality and of recognizing the impact of design choices on society and the environment. Ultimately, the theme calls for a critical approach to sustainability and craft and approaches to and practices of design that recognizes the complexities and interconnectedness of the issues at hand.

Imaginaries] __ [Materiality

This theme explores tensions and overlaps between imaginaries and materiality in relationship to design and designing. The theme can highlight tensions between e.g. materiality and symbolism, craft and care, as well as representation vs embodiment. The theme underscore how imaginary symbolism have material realizations, that the material interpretations in artefacts are part of everyday and idealistic imagination. Ultimately, the theme encompasses tensions between the materiality of designing and the imaginary futures and contemporaries they represent.

Interventions] __ [Realities

This theme explores tensions and overlaps between interventions and the realities related. The theme can highlight tensions between implementation and context, power and participation, as well as abstraction and socially constructed realities. The theme underscore contextuality, and the importance of practices that act on the basis of culturally informed choices. The theme also underscores the role of framing or mediating aspects, such as political and social mediation.

Practices] __ [Bodies

This theme explores aspects in-between design practices and body, highlighting tensions and overlaps between the two topics. The theme can highlight tensions between e.g. bodily assumptions, embodied material imaginations, functional aspects and sensorial experiences, universality ideals and diversity, as well as perpetuation of cultural norms. The theme underscore the importance of design practices material and embodied nature, as well as the blind spots created by exactly this nature.

Mon

09	Workshops					
15						
1530	Opening, Keynote					
1630						
17	Craft] [Sustainability	Imaginaris] [Materiality	Interventions] [Realities	Practices] [Bodies		
1930	Reception, Exhibition sneak peek					

Tue

09	Craft] [Sustainability	Imaginaris] [Materiality	Interventions] [Realities	Practices] [Bodies		
1030						
11	Keynote					
12						
1330	Craft] [Sustainability	Imaginaris] [Materiality	Interventions] [Realities	Practices] [Bodies		
15						
1530	Craft] [Sustainability	Imaginaris] [Materiality	Interventions] [Realities	Practices] [Bodies		
17						
	Main exhibition					

Wed

09	Craft] [Sustainability	Imaginaris] [Materiality	Interventions] [Realities	Practices] [Bodies		
1030						
11	Nordes Commons					
12						
13	Craft] [Sustainability	Imaginaris] [Materiality	Interventions] [Realities	Practices] [Bodies		
1430						
15	Closing					
1530						



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Keynotes



Keynote Kristina Lindström and Åsa Ståhl



Photo: Looove Broms

Keynote Kristina Lindström and Åsa Ståhl

Un/Making - spaces in between

Kristina Lindström, Åsa Ståhl

Design, with its historical ties to modernism, futures, progression and industry has been dominated by making more and the new. While design has participated in making many lives easier and more comfortable, design has also contributed to generating some of the socio-ecological challenges we are facing today. In this talk, Lindström and Ståhl will discuss an emerging body of work that acknowledges both the creative and destructive side of design, and invites hesitations regarding the assumption that all kinds of problems can be addressed by more design.

Lindström and Ståhl will draw on their own experiences of setting up the Un/Making Studio where they explore and purpose a turn towards un/making in and through design. As design researchers they have responded to and engaged with emerging, ongoing, and anticipated processes of unmaking. This includes attempts to clean polluted soil in post-industrial landscapes with the help of plants, proposals to ban disposable plastic products and reports on ongoing and anticipated biodiversity loss. They ask: what socio-ecological imaginaries does un/making make space for? And, how do we as designers and design researchers keep paying attention to openings, potentials, hesitations and frictions in the space between making and unmaking?

Kristina Lindström (PhD) is a Senior Lecturer in design at Malmö University, working with participatory, speculative, and inventive methods with a focus on designerly public engagement and future-making. She coordinates the research platform Collaborative Future-Making at Malmö University where she leads the research project Grief and Hope in Transition. She is also part of the research environment Design after Progress: reimagining design histories and futures.

Åsa Ståhl (PhD) is a senior lecturer in design at Linnaeus University. Her work combines participatory design with feminist technoscience and environmental posthumanities in explorations and speculations of how to make and know liveable worlds. Ståhl currently leads the research project Holding Surplus House and the research environment Design after Progress: reimagining design histories and futures.

Together Kristina Lindström and Åsa Ståhl run the Un/Making Studio, built on two decades of collaborations between the two of them and others.



Keynote Julia Lohmann



Photo: Mikko Raskinen

Keynote Julia Lohmann

Being more like seaweed

Julia Lohmann

As humans, we are affecting the living reality of every life-form on Earth. However, we are acting carelessly and destructively towards the multitudes of non-human organisms that have enabled us to come into being and are still supporting us today. Without oxygen-generating cyanobacteria in the Ocean we would not be here. We grasp these evolutionary complexities and still neglect the seas, degrading them and their ability to buffer the environmental impact of the Anthropocene. Why do we not – instead of hoping that potential future technologies might someday ameliorate the damage we have done – actively think alongside and deploy the organisms we know to be capable of healing ecosystems?

We need to urgently adopt a regenerative rather than extractive mindset towards nature. Design as a connective discipline can enable this, emmeshing caring, knowing and acting into regenerative practices that benefit humans and non-humans alike. Through my practice with seaweed as a material for making I am exploring how we might prioritise and expand the regenerative eco-systemic agency of the organisms that become biomaterials. Macroalgae like seaweed are habitat builders, sheltering and feeding numerous marine organisms as they grow. They extract nutrients and pollutants from seawater, producing oxygen and biomass that sequesters carbon – or may become biomaterials. If we can learn to be more like seaweed, we may develop meaningful, empathic ways of being in the world that extend our survival and that of the other lifeforms that sustain us. We might yet become a keystone-species.

Julia Lohmann, designer, researcher and educator, investigates and critiques the ethical and material value systems underpinning our relationship with nature. She is a Professor of Design Practice at Aalto University, Helsinki, Finland. Julia is passionate about eco literacy and ocean protection. In 2013, she founded the Department of Seaweed, a transdisciplinary community of practice exploring the sustainable development of seaweed as a material for making. Julia Lohmann believes that any exploration of biomaterials needs to be based on amplifying their regenerative eco-systemic impact. In her practice and teaching she promotes an empathic, more than human-centric mindset and views design as a way of connecting knowing, caring and acting across disciplines and different levels of complexity. Julia is contributing to research consortia relating to design, biomaterials, science and ecology. She holds a PhD from the Royal College of Art and her work is part of major public and private collections worldwide.



Full & exploratory papers



Craft] — [Sustainability



DOES SEEING ENTAIL BELIEVING? VISUALISING INFORMATION DURING SOCIETAL CRISES

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ABSTRACT

Despite the shared belief that information visualisations are immune to manipulation, as visual stimuli, they “*are no different from words in this regard, for any means of communication can be used to deceive*” (Tufte, 1983). This paper discusses the power of information visualisation in engendering “*a narrative experience*” (Segel et Al., 2010) that cannot be considered politically neutral (Boehnert, 2016). In this sense, it can be compared to the concept of “*tropes*” (Haraway, 1988) which are narrative tools transmitting political and social agendas. The paper explores the existing literature addressing the circulation of information disorders (Wardle & Derakhshan, 2019) on social media platforms when supported by information visualisations. The starting point is that the complexity of the topic, its interdisciplinarity, and the dense availability of reflections call for a crisis, a “*fracture line*” (Foucault, 1969), that can lead to the unveiling of omitted dimensions. The exploration enabled the identification of a space for reconsidering critical approaches to information visualisation circulating on social media by defining literacy resources that combine terminologies, views, methodologies and

approaches from diverse disciplines and fields.

INTRODUCTION

Information disorders, social media platforms, societal crises and information visualisations. Social media platforms are increasingly mediating how we access information in a way that may facilitate the circulation of falsehoods (Ceron et Al., 2020). This phenomenon is related to the problem of “*information disorders*” (Wardle & Derakhshan, 2019), namely those kinds of bad information such as fake news, propaganda, conspiracies, disinformation, misinformation, and malinformation circulating within such digital ecosystems. Social media platforms, as “*dominant infrastructural and economic models of the social web*” (Helmond, 2015), can be used to influence social perception and narratives, especially about controversial issues (Cinelli, 2020). The concept of *societal crises* addressed in this paper refers to those situations of significant social change (Prooijen & Douglas, 2017) on which social actors disagree (Venturini, 2010). Similarly, the online circulation of information visualisation directly affects society (Nærland, 2021), a fortiori when used to inform audiences about social issues. As communication instruments, they embody values, ideologies, and perspectives and often serve political priorities and agendas (Boehnert, 2016).

The matter of the reliability of information visualisations circulating online becomes clear when analysing the case of COVID-19. During the pandemic, there was a significant shift towards human activities being deeply immersed in the internet, and a flood of cultural, educational, and informative visualisations have been produced, consumed, and shared online. The World Health Organisation (2020) defined such threatening complexity as an “*infodemic*”, namely an “*excessive amount of information about a problem*” (ibidem) which encourages the “*spread of*



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<https://doi.org/10.21606/nordes.2023.63>

misinformation, disinformation and rumours during a health emergency” (ibidem).

As Drucker (2020) stated: “*the Covid crisis has generated a real need to understand and communicate vital information about data, models, and outcomes. We needed it to persuade, understand current conditions, and predict future outcomes. There has never been a moment where information visualisation has been thrust so much into the centre of everyday life*”. In this context of significant proliferation, information visualisations can be crafted to convey specific narratives (Atherton, 2021) and aimed at “*engaging citizens around a wide range of social issues*” (Dörk et Al., 2013). Figure 1 is an example of the responsibility visualisations have in such critical times. As observed by Shelton (2020), the graph shows the decreasing number of new COVID-19 cases from April 28 to May 9, 2020. However, the x-axis is not ordered by date but by the total value per day, making the visual comparison useless and -even worse- suggesting wrong information. Another example along these lines is the collection of pie charts analysed by Doan (2021), which misuses visual proximity to minimise the COVID-19 death rate compared to SARS and MERS (see Figure 2). Moreover, the time variable is excluded from the visualisation, which is crucial when studying the effects of a disease.

Therefore, understanding the effects of information visualisations during a social crisis is critical in taking appropriate actions to mitigate the situation and reduce personal and community risk. In this context, access to quality information is essential for citizens to engage in democratic processes.



Figure 1 – Top 5 countries with the most significant number of confirmed COVID-19 cases. Georgia Department of Public Health, 2020.

Albeit the literature has consistently addressed the challenges arising from the rhetorical nature of information visualisations (e.g. Hullman & Diakopoulos, 2011, Offenhuber, 2020, Lee et Al., 2021, Muehlenhaus, 2013, Engebretsen & Kennedy, 2020), as well as the circulation of information disorders on social media platforms (e.g. Pavliuc & Dykes, 2020, Cinelli et Al., 2020, Tagliabue et Al., 2020, Blevins et Al., 2021)

and social issues (Marres, 2015, Venturini 2010), little has been written on the overlapping of these themes. How do information visualisations support the circulation of information disorders on social media platforms during specific societal crises? This paper concentrates on this gap and aims to collect relevant evidence from diverse disciplines to outline a new space for possibilities.

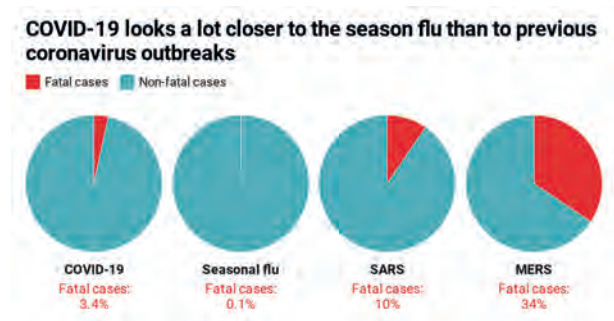


Figure 2 – COVID-19 compared to seasonal flu. Wolfson E., 2020.

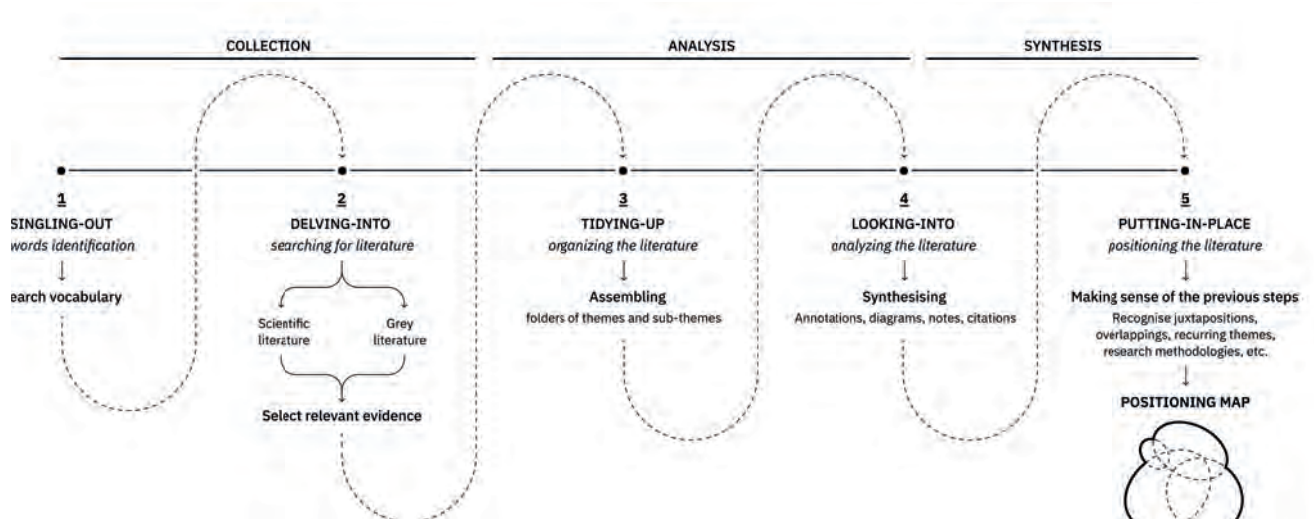
METHODOLOGY

Reviewing the context. The previous paragraphs introduced the problem and the controversy (Venturini, 2010) surrounding the research, which elicits the consequent need to explore the evidence and fields involved. Stemming from contextual review (Gray & Malins, 2004) in design research, this activity invokes disciplinary and non-disciplinary sources to define the extent of the inquiry and the state of the relevant knowledge base to date. This process contributes to both the identification of the research problem and the research of that problem through the methodology (ibidem).

What is the role of information visualisations in the circulation of information disorders on social media platforms during societal crises?

This overarching question defines the direction in which to orient the process of “*thematic literature review*” (Muratovski, 2016) aimed at examining various perspectives from different fields around the phenomenon framed in the introduction. Such process is articulated around three main actions drawing from the approach of grounded theory: 1) the collection of evidence through the identification of keywords and disciplinary areas; 2) the analysis of the information collected by “*systematically extracting ideas, theories, concepts and methodological assumptions*” (Hart, 1998) proposed by other researchers and plausible for the new inquiry; 3) the synthesis, intended as the capacity to re-assemble and make “*connections between parts identified in the analysis*” (Hart, 1998). Following the order of the three main actions aforementioned, and drawing from the steps theorised





by Cooper and Hedges (1993), for this research, the process was further divided into five sub-stages (see Figure 3), named after the objectives identified for each of them:

- 1) Singling out
- 2) Delving into
- 3) Tidying up
- 4) Looking into
- 5) Putting in place.

The outcome is a “*positioning map*” (figure 4) showing the existing themes, questions, and methodological assumptions and uncovering the gap in such an ecosystem: a potential blank aperture encouraging new explorations and alternative readings—a void for the research to blossom.

- 1) *Singling out*. The first step was to develop a search vocabulary of the relevant keywords to locate potentially appropriate evidence. The act of *singling out* is based on the objective expressed in the research question, plus prior knowledge on the topic.
- 2) *Delving into*. The search vocabulary identified in the previous step is used to begin searching for literature. The search strategy plays a crucial role: how to outline the query? Which keywords to combine? Which operators to include in the query string? Among the available pool of results, it is fundamental to select potentially relevant literature, dismissing what does not address the issue.
- 3) *Tidying up*. The relevant literature is assembled in folders organised by themes and sub-themes. The themes are defined after a careful analysis of abstracts and indexed keywords. Reference management tools may facilitate this process.
- 4) *Looking into*. The effort required for this step is the most intensive of the entire process. It involves analysing each component of the collection, annotating it, discarding it, or

exploring it in detail, and synthesising concepts and connections between the fields involved through diagrams and visualisations.

- 5) *Putting in place*. The last cumbersome endeavour is to make sense of previous actions.

The encompassing aim is to recognise juxtapositions between different disciplines, overlappings, recurring themes, related research methodologies, and the complexity of the scientific discourse in such a way as to map the extent and relationships, following an approach similar to the cartography of controversies (Latour, 2007).

Mapping the void. The positioning map is organised around *main-* and *sub-* areas that define the disciplinary fields involved.

Design, media studies, and social sciences are the broadest fields with the most significant number of sources. Each of these areas addresses more specific sub-areas circumscribed to the purposes of the research. For instance, within the design field, the research focuses on information design, which is a sub-area of communication design. Moreover, these macro and micro areas are organised around *relevant concepts* that are not exclusive to a single discipline but rather addressed from different perspectives, so it can be that some fields overlap.

All the *relevant concepts* are further divided into clusters according to whether they are *terminologies*, *theoretical approaches*, or *methodologies*. Clustering, juxtaposing, merging and confronting such concepts allowed for reasoning about the gap, deducing applicable theories, outlining interconnections, and spotting viable pathways.

The *terminology* cluster is further divided into three micro-groups:

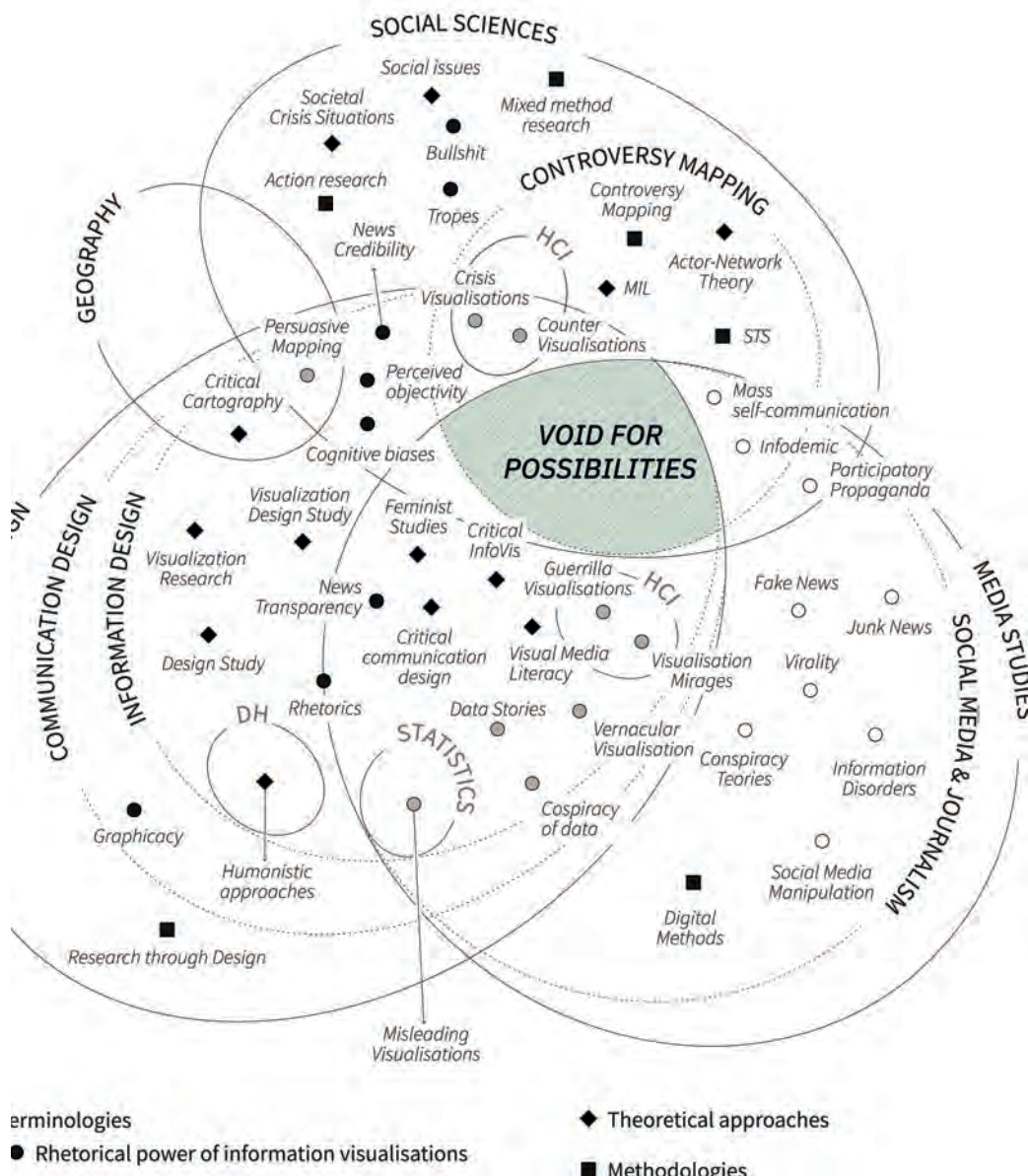
- 1) Authors who deal with information disorders on social media platforms. This cluster is

- solely positioned within the media studies field and comprises concepts such as “junk news” (Venturini, 2019; Rogers & Niederer., 2020), “virality” (Nahon & Hemsley, 2013), “participatory propaganda” (Wanless & Berk, 2018), “mass-self-communication” (Castells, 2009), “conspiracy theories” (De Zeeuw et Al., 2020), etc.
- 2) Authors who elaborate on the definition of unreliable information visualisations. From this cluster emerges a dense heterogeneity in the definitions conceived and the lack of a common vocabulary. Some examples may be “counter visualisations” (Lee et Al., 2021), “misleading visualisations” (Tufte, 1983).

Cairo, 2015), “*crisis visualisations*” (Zhang, 2021), “*visualisation mirages*” (McNutt, 2020), “*vernacular visualisations*” (Snyder, 2018).

- 3) Authors that focus on the rhetorical power of visualisation. This cluster touches on different disciplinary fields that approach information visualisations as “*rhetorical instruments*” (Campbell & Offenhuber, 2019), providing “*a single translation of reality*” (Kosminsky & Seeler, 2019).

The *theoretical approaches* cluster comprises those approaches dealing with the politics and ethics of representation in terms of transparency of processes and



intentions. Some examples are “*critical InfoVis*” (Dörk et Al., 2013), “*Feminist Studies*” (D’ignazio et Al., 2020), *Critical Cartography* (Crampton et Al., 2015), and “*Design Study*” (Meyer & Dykes, 2019). The cluster also includes those authors researching and advocating for various kinds of literacies (e.g. visual, information, media).

The last cluster maps the relevant *methodologies* for the research. For instance, *Action Research*, in the guise of *Research through Design*, directs the entire research towards a designerly inquiry with the aim of producing an artefact that promotes societal change. The latter, combined with the “*case study approach*” (Law, 2015) of *Science, Technology and Society* (STS) and “*digital methods*” (Rogers, 2013)

In this ecosystem, the gap is positioned in the middle, at the intersection of the three main fields, suggesting new strategies in combining such heterogeneous knowledge in ways that can address the social impacts of *visualisation-supported* information disorders.

DISCUSSION

The following paragraphs discuss the literature identified in the positioning map that elaborates on: 1) the rhetorical power of information visualisation; 2) the effects of deception; 3) the issues arising from the circulation of information disorders on social media platforms; and 4) the need for critical approaches for information design circulating on social media.

The rhetorical power of information visualisation.

Even though the paper focuses on more recent times, the visual encoding of information is an “*age-old practice*” (Rendgen et Al., 2019) that stems from the necessity of translating complex information into graphical forms that “*facilitate understanding*” (Kirk, 2019) and allow for “*reasoning about quantitative information*” (Tufte, 1983).

The act of translation necessitates different degrees of abstraction and simplification (Kennedy et Al., 2016); thus, the narrative power of information visualisation has always been evident over the centuries.

Cartographic visualisations clarify this idea: a map is the result of a simplification process of projecting the uneven, spherical surface of the world on a two-dimensional plane. In fact, “*to avoid hiding critical information in a fog of detail, the map must offer a selective, incomplete view of reality*” (Monmonier, 1996).

Simplification and abstraction trigger specific narrative experiences, which may orient and direct the readers towards particular directions. Ergo, information visualisations work within the narrative frames of their designers and disseminators.

“*Les Triomphe des armées françaises*” (see figure 5) is an interesting example along these lines: the visualisation celebrates the victory of France in the war

of the first coalition. The cartographic element, in this case, is juxtaposed with illustrations that reinforce the propagandistic message embedded in the visualisation. The rhetorical power of information visualisation has been recognised and well exploited over the centuries, from the “*Golden Age of Statistical Visualisations*” (Friendly, 2008) to the more recent “*Second Golden Age of Data Design*” (Kostelnick, 2019) of the 21st century. In fact, over the last decade, the use of information visualisations has grown significantly (Bohman, 2015), shaping our perception and understanding of society. The outbreak of COVID-19 contributed to this trend: information visualisations became pivotal in online communication (Kasumba et Al., 2022) to make sense of the complexity and evolution of the pandemic. Research centres, data scientists, information designers, journalists, governments, as well as non-experts and social media users (Bowe et Al., 2020) became active actors in producing and disseminating such content. This heterogeneity of actors raised challenges regarding reliability and accuracy in the myriad of materials produced.



Figure 5 - Le Triomphe des armées françaises. Antoine Maxime Monsaldu, 1797.

From informing to misleading. Visualisations like words are powerful “*rhetorical tools*” (Hullman & Diakopoulos, 2011): they can be crafted to “*distort or lie*” (Cairo, 2015; Jones, 2018) and thus, they can mislead (Bergstrom et Al., 2020).

Like every narrative product, they convey the beliefs and perspectives of the social group of their creators (Pandey et Al., 2015). Similarly, how a visualisation is consumed depends on the literacies and assumptions of the final viewers.

In fact, viewing is influenced by gender, nationality, language ability, education, and age (Kennedy et Al., 2016) and by the discourses around data, society, and culture (Hill et Al., 2016). Social conditions affect how readers engage with culture (Barthes, 1978).

Therefore, visualisations cannot be considered impartial facts about the world and here lies the risk of underestimating their influence on society.

Whether there is a conscious intention to mislead or involuntary errors in shaping the charts and decoding

the underlying information, the resulting effect of deception may lead to unethical or irresponsible practices and outcomes.

On information disorders and social media platforms.

The concept of deception is linked to information disorders. The large-scale disruption of the public sphere due to *information disorders* proliferating on social media platforms, recognised as one of the most significant governance challenges, is causing widespread concern worldwide (Marwick et Al., 2017). In this respect, social media play a crucial role: they mediate access to information and facilitate content virality to such an extent that ordinary -and malicious- users can reach as many readers as established news agencies (Allcott et Al., 2017).

Compared to previous media technologies, the structure of social media platforms is utterly different. The way content circulates is democratic to such an extent that “*an individual user with no track record or reputation can in some cases reach as many readers as Fox News, CNN, or the New York Times.*” (Allcott et Al., 2017). The consequences on society can be manifold: from distorting people’s ability to make sense of the world around them to undermining democratic processes and individuals’ security.

Alongside, algorithms produce what Gillespie calls “*calculate publics*” (Gillespie, 2014) by transforming “*a discrete set of users into an audience*” (ibid). This may explain why information disorders find such ecosystems so fertile.

A good case study to explore for further elaboration on the topic is COVID-19. For instance, many incidents of public health concerns occurred out of information disorders circulating online during the pandemic. In some cases, the distorted perception of risk resulted in higher vaccine hesitancy and weaker adherence to mask-wearing protocols, as well as in the adoption of non-scientifically accepted treatments such as lemon and salt gargles and bleach injections (World Health Organisation, 2020a).

Seeing shall not entail believing. Critical approaches in information design.

This positioning paper aims to outline new possibilities in supporting critical approaches to information visualisation, starting from the assumption that *seeing should not be believing*.

To be critically engaged means nurturing the act of asking new pensive questions that challenge current conventions and assumptions and help to detect and disclose invisible and unspoken biases. Thinking critically is about using the knowledge generated from the “*new questions*” to reflect on “*what matters most*” (Hooks, 2010).

Starting from a kind of critical approach assuming that visualisations are always “*situated*” (Haraway, 1988) and depend strongly on several changing factors, the “*new possibilities*” enabled by this research lean

towards the design of effective literacy strategies aimed at mitigating and balancing the side effect of visualisation-supported information disorder. In particular, the systematisation of prior knowledge drawing from the aforementioned heterogeneous disciplinary fields can contribute to those initiatives supporting various literacies in the fields of media and information.

FUTURE WORK

The dense plethora of knowledge that emerged from the literature review calls for a “*fracture line*” (Foucault, 1969), which can lead to the unveiling of alternative dimensions. Stemming from this approach, the research aims at mitigating the social impacts of “*visualisation disorders*” through literacy initiatives addressed to those actors active in producing information visualisation (e. g., designers, and data journalists).

Therefore, future work will lean towards designing new tools and strategies which can enrich existing initiatives for individuals, democracy, and society in the field of Media and Information Literacy (MIL).

To be more specific, future efforts will focus on a threefold path: a) systematise and label prior knowledge to unify language; b) enrich the systematisation with the aspects of circulation, intentionality and caused harm of information visualisation on social media; c) make the systematisation applicable to support new strategies for literacy.

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WHAT DID WE ACTUALLY DESIGN HERE AND WHAT PURPOSE DID IT SERVE? SOME GENERATIVE METAPHORS FOR UNDERSTANDING SERVICE DESIGN IN THE SWEDISH PUBLIC SECTOR

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ABSTRACT

Building on the lead author's experiences as a design practitioner in the Swedish public sector, we argue that Service Design as practiced today is, in many cases, failing to attend to the design and delivery of actual public services. We explore the blank space we perceive between the rhetoric of evangelists for Service Design in the public sector in Sweden, the reality of working as a Service Designer in the Swedish public sector, and the reality of materialising public services. To explore this blank space, we present a number of generative conceptual metaphors for what, if not actually designing services, Service Designers or those adopting practices in the name of Service Design might more materially be doing. We share a selection of these, in the hope of engaging the NORDES community in helping (re)integrate the rich tradition and conceptual frames of design as a materialising practice, with the practice of actually designing and materialising public services.

INTRODUCTION

Recent discussions amongst design researchers have highlighted that (service) design should more critically engage with the challenges of designing services in public sector contexts (Kimbell et al., 2022; Junginger and Bailey, 2017; Downe, 2016; Bailey, 2012). Specifically, recent work by Bailey (2021) analysing the growth of design-based approaches in the public-sector

in the United Kingdom treated design, in this context, as a discourse. Which is to say, a language act. We interrogate this idea further and aim to explore the performativity and re-citability (Hollywood, 2005) of Service Design in the public sector in Sweden. In doing so we pose the contention that Service Design as 'languaged into being' (Krippendorff, 2004) is something of an abstract metaphor (Marres, 2016; Gibbs, 2008). Through various acts of re-citation Service Design (Tjänstedesign) in the public sector in Sweden has, in many cases, become detached from its original meaning and purpose; the design of services. We suggest Service Design in the Swedish public sector has become a reified metaphor (Blackwell, 2007) for an amalgam of facilitation techniques and representational practices that often have little to do with either the design *of* services, or design *for* service (Kimbell, 2011), and in many cases have become entirely divorced from design as materialising practice. We argue that there is a significant gap between Service Design as metaphor and service design in practice. To outline our argument in the terms of the NORDES 2023 theme – this reification of Service Design and the resultant gap between abstract concept and the concrete reality to which it is supposed to relate, drastically undermines how Service Design is understood and practiced. This, we contend, is paradoxically undermining the ability of Service Designers to contribute to the design and materialisation of actual public services.



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EXPLORING THE DIALECTIC OF GOODS VS SERVICES

A full review of the literature describing the transition to services has been documented extensively elsewhere (e.g. Blomberg and Darrah, 2015; Young, 2008). This makes clear that we live in increasingly servitised times. In the discipline of Service Research this transition has been articulated as a switch from a ‘goods-dominant logic’ to a ‘service-dominant logic’ (Vargo and Lusch, 2016). This ‘goods to services transition’ has had an extensive impact in terms of how Service Design as a practice has been framed theoretically and metaphorically (Wetter-Edman et al., 2014; Kimbell, 2011), especially in Sweden. In the public sector it is claimed that this transition demands a shift from the ‘factory-production mindset’ to ‘service co-creation’ (Durón et al, in Rasche and Pfannstiel, 2018, Osborne, 2017; Sangiorgi and Prendiville, 2017; Junginger, 2016; Fransson and Quist, 2014).

The goods-dominant frame, with its factory metaphor has therefore been significant to much of what Service Research and Service Design has positioned itself in relation to. Using this factory metaphor as a starting point, how can we make more sense of what designing services in the public sector might mean? As we explore this, we ask the reader to consider whether abstract metaphors positioned in opposition to goods and products potentially represent an ‘overmining’ (Harman, 2013) or a neglect of the vital role of material design practices in the effective design and delivery of services?

METAPHORS WE DESIGN WITH IN PUBLIC SECTOR ORGANISATIONS

Just as abstraction aids the generalisability of ideas and their spread and communication (Robinson, 2022) myths and metaphors have always been one of the ways that humans make sense or construct meaning for themselves (Lakoff and Johnston, 2003). Working with metaphors has established precedent in many design disciplines (i.e. Murray-Rust et al, 2022; Lockton et al, 2019; Braedley, 2019; Cila, 2013; Hey et al, 2007; Blackwell, 2007; Benyon and Imaz, 1999) however, in Service Design a more detailed discussion on how metaphors shape design practice, or discussion of their utility in helping the translation of abstract ideas into concrete experience has been marginal. In order to “reduce the situation in all its complexity to a simpler, thinkable form” (Beckett, 2017) we draw upon Dorst’s concept of framing (2015), Morgan’s seminal *Metaphors of the Organisation* (in Örtenblad, Putnam and Trehan, 2016), and Gulari’s (2015) *Metaphors of Design* as a way of situating our own discussion of the role of metaphor in both understanding services as a concept, and to aid understanding of the public sector

organisation itself as a site of the design of services. From this we propose a range of overlapping generative metaphors (Schön, 1979) for how Service Designers or those managing them might presently understand their roles in public sector organisations:

“Metaphors are a device for embellishing discourse, and they are also a way of thinking, seeing, and perceiving reality” (Morgan, 1986, in Örtenblad, Putnam and Trehan, 2016).

SERVICE DESIGNER AS HOLIST

Extending and reifying the factory metaphor employed by proponents of service-dominant logic, (Fransson and Quist, 2014), much like wider literature exploring public sector bureaucracy more generally (i.e. Dunleavy, 2014; Etzioni-Halevy, 2013), discuss New Public Management and its impact on the public sector. This discourse describes how services are increasingly experienced as fragmented or discontinuous. Such discontinuity it is claimed, results in loss of value and creates failures of some functional or aesthetic ideal of perfection or seamlessness, resulting in inconvenience and frustration for users. This framing, and its wider logic allows service designers to position themselves as ‘holists’, bringing together different stakeholders in new constellations, mapping and documenting and rebranding disparate and disjointed products and interactions as cohesive and coherently packaged entities: In the process, aligning user expectations with what the organisation delivers and pursuing some aesthetic ideal of the seamlessness of delivering upon user expectations and capturing such value. Thus, design in this frame is seen as a unifying or homogenic process and the organisation problematised as mechanised, fragmented, and disjointed.

SERVICE DESIGNER AS PLUMBER

Extending the idea of designers as unifiers and homogenisers is a related notion of design as a reciprocal process, between participants in dialogue or co-creation and consequently designers as experts engaged in acts of simultaneous or reciprocal analysis and synthesis (Kolko, 2010; Dubberly et al, 2008). This second conceptual frame draws on earlier Cybernetic notions of circularity and requisite variety (see Fischer and Herr, 2019), and casts designers as manipulators of dynamics and flow, crafting collaboration between ‘silos’ in the public sector organisation, through skilled manipulation of repositories of data, information and people.

This framing problematises the organisation as siloed and bureaucratic and metaphorically positions the service designer as ‘plumber’ or a ‘thermostat’ capable of, by either some magical or rational process, identifying imbalances within the thermodynamic organisational system and balancing them, or



integrating and blending the contents of these silos. In this framing the role of Service Designer is focused on creating interactions and identifying different stakeholders around interfaces, mapping and modelling the exchange of information and flows of footfall or knowledge through both social and digital materials across the organisation.

SERVICE DESIGNER AS MECHANIC

The idea of Service Design as a teachable and codified practice is something that has been embraced by the global Service Design community itself (Stickdorn et al, 2018; 2010) perhaps under the influence of the adjacent discourse of *Design Thinking*, (Brown, 2009). The *Personas* and *Journey Maps*, *Blueprints* and *Canvases*, themselves often metaphorical and adopted or appropriated from other design disciplines, have created an idea of Service Design as a tool-based discipline, and therefore of Service Designers as stewards or proprietors of a toolbox of ‘magic methods’ (Kolko, 2010). In this framing, and through different means of organisational learning, interaction, and interpretation of the environment; organisations build shared mental models that allow them to make sense of their environment and act accordingly (Daft and Weick, 1984). These shared models and processes can thereafter be codified as tools; replicable, repeatable and teachable as part of the wider ‘factory ethos’ of the public-sector bureaucratic system.

This idea of Service Design as a codified, procedural, teachable discipline has been further fuelled by metaphors like that dominant representation of Service Design practice the Double Diamond (Murray et al, 2006) and a New Public Management and consultancy-driven idea of organisational and governmental systems being ‘fixable’ by external actors using codified toolkits and processes (Collington and Mazzucato, 2023).

SERVICE DESIGNER AS ENTERTAINER OR JESTER

This conception of Service Design tools as teachable and replicable can be considered alongside recent trends in Human Resource Management focussing on employee engagement and specifically affective engagement with work (Röttger-Rössler and Slaby, 2018; Hochschild, 2012). This sees Service Designers asked to lead or facilitate workshops, conducting or engaging in acts of public performance. This approach might also involve audience participation and is fuelled by Service Design’s embrace of the frontstage and backstage theatrical metaphor of the *Service Design Blueprint*. In this frame the Service Designer is cast in an extrovert, ‘happy clappy’ role, and Service Design as some sort of activity for boosting employee affective engagement at work. However, these theatrical ideas can themselves become embodied in the daily practice of Service Designers. Discursive workshops aimed at

co-creation or user engagement instead becoming light relief or novel or amusing sideshows or respite from the daily grind of public sector care or administrative work. This framing sees the role of Service Designer as entertainer and Service Design as some sort of novelty act.

SERVICE DESIGNER AS EVANGELIST

Closely linked in both its performativity and material superficiality to the framing of Service Designer as extrovert entertainer, and of Service Design practice as theatre, is the framing of Service Designer as evangelist or as a missionary. This framing sees the Service Designer or a new proselyte to Service Design, perhaps fresh from having participated in a recent two-day training course in Service Design methods, trying to convert ‘heathens’ amongst their fellow public sector workers who have not yet seen the light. Service Design at its most coherent in this framing is seen as an embodied or ritualised practice which aims to re-engage frontline or bureaucratic public sector workers with iconic representations of users. In so doing, Service Design is framed as the practice of reconnecting public sector workers empathically with the emotional and social lives of the customers or end-users they are supposed to be serving.

SERVICE DESIGNER AS ICONOLATRIST

Building on the above ideas, one of the ways that Service Design thus claims to reduce the complexities of designing public services is in utilising the library (if you read) or toolkit (if you act) of Interaction Design. Chief amongst these tools is *The Persona* (Cooper, 1999) and the *Journey Map*. This focus on iconic representations of the user, together with often methodologically superficial interviews and observations, supports a process of telling ‘users stories’ and the introduction of first-person narratives into the public sector organisational discourse (see Vink, 2019). This sees Service Design metaphorically as a humanising practice, and the service designer as humaniser, creating and forming human representations as part of their approach to simplifying and democratising complexity.

In this frame, perhaps especially if Service Designers are situated in “Development Departments” or attached to Human Resource functions in public sector organisations – an emerging trend – the Service Designer is cast as a diviner of humanity within the public sector bureaucratic system, and one that can help public sector workers to reflect or learn through meditations on service users and their journeys. This frame and its related concept of the ‘User Story’ often sees service design align itself with Agile methodologies. Another professional practice that when employed in the public sector is often re-cited and re-

instantiated in much more superficial forms than those suggested by its original proponents.

SERVICE DESIGNER AS VISUALISER

The complexity posed by the ‘layers’ of policy within public sector organisations or the aforementioned idea of the silo-ed public sector organisation, points to another of the pre-eminent rhetorics found in the discourse of public sector Service Design. The idea that like services themselves, many of the challenges that the public sector face are intangible; we can see the effects of homelessness for example, but it is harder to observe the causes, or trace the causality. How do we solve complex problems if we can’t see (in the case of a generative frame of visual design), or fully grasp the issue (in the case of a generative frame of material design or somaesthetic design), or if we can’t understand the actors implicated (in the conceptual frame of Social Design). These frames, channelling wider New Public Management logics of quantification and managerialism, attempt to legitimise design in the public sector by asking; how can we (re)solve the complex issues we face if we are not able to perceive them?

This idea of a designer as visualiser, socialiser or materialiser is further elaborated with reference to the mythos amongst proponents and theorists of servitisation that now there exists intangible services where once there were mere tangible products. With their tools for mapping and exploring causality and uncharted journeys between touchpoints the Service Designer can utilise the practices of Graphic Design and thus claim to help visualise previously unseen patterns or synthesise hitherto unimagined solutions to such problems. Drawing on the material tradition of Product Design and colonising and operationalising a variety of interpretive artistic practices Service Designers can also fashion themselves as ‘prototypers’, able to produce material prototypes to test their proposed solutions and bring intangible ideas or human needs to life in more engaging material forms: Making such ideas and concepts easier for users to understand, engage around, and test in practice.

CALL FOR DISCUSSION

Our primary concern in this paper has been to draw attention to the implementation gap, or shortcomings of Service Design as practiced in the Swedish public sector to actually (re)design, (re)shape or (re)develop services. We speculate that this perceived failure might be because of differing generative metaphors employed by subsets of the design profession and in how these frames are then adopted, embodied, and re-cited by other stakeholders who might also lack formal design training but who have otherwise been exposed to the rhetoric and been engaged in the performativity of

Service Design in the public sector. We consider that such observations might also be a result of the uncritical and inexperienced way Service Design as practiced has absorbed or assimilated different conceptual frames and adopted tools from other design disciplines. We question whether it is this ‘magpie-like’ approach to implementing a variety of design-based perspectives and reciting and redeploying them in the ‘design of services’ that is typical of the ‘everything as a service’ generative metaphor? If the practice is design, and ‘everything can be a service’ then – this simplistic logic appears to be suggesting – we can use any design method or tool, and simply talk of Service Design, whether we are designing or intending to design services or not? We feel the same conversation could and should be had of other Capitalised Abstract Noun + Design discourses such as Policy Design or Systems Design, that in their re-citation in public sector discourse appear to lose many of the links to the original practices, research literature or expertise on which they were based, or out of which such discourses originally grew.

In the Swedish public sector, and despite the rhetoric of Service Design and its proponents, there exists very little evidence – to paraphrase Friedman and Stolterman (in Höök, 2018) – of design ‘addressing human needs, or acting on the physical world’. If no services were designed here, what needs did get addressed and what transformation of the physical world or social world occurred? And if it occurred, what form did it take? In many cases it might be possible to argue that some discussion, collaboration, or consultation was performed through (service) design, such as using ‘design games’ and employing design-based approaches to conduct qualitative research. However, if materially, this just amounts to people sitting around in a room talking with the aid of a scattering of post-its on a whiteboard or one of two printed journey map ‘canvases’, or people sitting on Zoom talking around a Miro board – what materially is the difference between ‘design-based approaches’ in this context and any other forms of semi-competent ‘facilitation’, ‘participatory citizen engagement’ or for that matter any number of non-design based public-sector ‘development’ or ‘consultancy’ methodologies?

CONCLUSION

In a bid to conclude this exploratory paper and provoke further discussion, we observe that much of what is conventionally referred to as Service Design as currently practiced in the Swedish sector might in fact be nothing more than ‘facilitation’ or ‘stakeholder engagement’ or some form of loosely defined and poorly operationalised ‘qualitative research’. Such qualitative research and experientialism can form a critical component of the service design process. However, conflation or reification of superficial



qualitative research, or participatory ‘design games’ (Schuler and Namioka, 1993) as Service Design potentially erases much of the potential of design and of designers’ potential to redesign public services. Superficial approaches or understandings of Service Design as a materialising practice neglect attendance to much of the service-orientation and value generating potential of the discipline as a professional practice. It is furthermore often unclear what purpose many of these design games serve, or how the research insights they generate contributes to the design of services. In this paper therefore we have begun to sketch some ideas that might help make sense of this confusion, and shared several ‘concrete metaphoric vehicles’ (Ontony, 1993) or ‘generative frames’ (Schön, 1979) for how, what now passes as Service Design as practiced in the Swedish public sector, can instead be understood.

If we are serious about advancing the use of design-based approaches in the public sector in Sweden what more as designers and design researchers do we need to do to ensure that our tools and expertise are not simply being misappropriated to provide gimmicks or “roliga timme (happy hour)” for bureaucrats, and are employed instead in the design of actual services and in creating real value and addressing real needs?

Can we use the identified generative frames or others that they provoke, to advance a new more critical research agenda exploring how design methods are currently being employed in Swedish public sector organisations? Can such generative frames also help highlight particular logics or ways that certain types of design problems are languaged, embodied or materialised into being? Through greater sensitivity to citational practices within the discourse of Service Design, can we ensure that the rich material tradition of design that gave us these practices is perhaps better (re-)integrated and (re-)engaged in supporting the design and materialisation of actual public services?

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WAYS OF SEEING DESIGN RESEARCH: A POLYPHONIC SPECULATION

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ABSTRACT

We present six speculative designs that all explore the challenge of representing the broad corpus of Design Research in the form of an interactive data repository. We describe the development of the ideas, identify common themes, and highlight two related challenges: (i) The challenge of reflecting the *diversity* of Design Research in a repository; (ii) The challenge of capturing *context(s)* during the Design Research process. We argue that these challenges constitute a ‘causality dilemma’ that is inhibiting the Design Research movement. We offer insights into potential responses to the dilemma, signpost opportunities for future work and reflect on the value of ‘polyphonic speculation’ – dialogue between design researchers speculating through design on a common topic – as a design tool for probing complex challenges.

INTRODUCTION

Where do you go to find examples of Design Research? There are many places to look, such as the Digital Libraries of the Design Research Society (DRS) and the Association for Computing Machinery (ACM), as well as academic journals in Art, Design, the Humanities, and the Sciences. Many of these resources are discoverable through search engines like Google Scholar. Yet, Design Research organises under many labels (Frayling 1994) and its knowledge outputs take many forms (Pierce, 2021), from academic papers and pictorials to various media, products, services, and more. Only a fraction of these has a digital object identifier (DOI) like the one at the bottom of this page.

Many examples of Design Research exist piecemeal, as fragments in images, videos, blogs, etc. Many do not identify as Design Research (Lindley & Coulton, 2020). Some of the richest resources can only exist outside of text: posters, demos, etc. Prototypes in cupboards the world over harbour rich stories and histories. Yet, they often remain locked away, behind closed doors. Some are ephemeral; transient; exhibitions in museums and galleries; events like Dutch Design Week.

With such a fragmented landscape, gaining an overview of the field of Design Research can be difficult. This is a problem... Not just for newcomers to Design Research, who may be unaware of its material diversity, but also for the field itself, which continues to grapple with a fragmented identity (Gaver, 2012; Green et al, 2021) and publication paradigms that do not always play to its strengths (Lindley et al, 2021).



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Craft] __ [Sustainability

Academic publications – even multimedia formats such as pictorials and videos – are not well-suited to communicating the materiality, physicality, textures, interactivity, and depth of Design Research knowledge. The *Research through Design* conference (RtD, established 2013) confronts this challenge through its structure, however, which includes a parallel exhibition of Design Research artefacts, as well as “rooms of interest” that curate related work in a gallery-like setting, and presentations that adopt a show-and-tell format reminiscent of art school ‘crit’ sessions. However, beyond conferences like these, the forms of knowledge and insight that Design Research offers are harder to locate. It is therefore difficult for newcomers, outsiders, and domain experts alike to gain or maintain an overview of the field. There is a widely shared enthusiasm across the Design Research community to share knowledge more openly and comprehensively. How can we better support this objective?

WHAT IF THERE WAS AN INTERACTIVE REPOSITORY FOR DESIGN RESEARCH?

In this exploratory paper, we consider the challenge of making Design Research more comprehensively accessible, through a speculative design inquiry, in which six designers each responded to the prompt: *What if there was an interactive repository for Design Research?* As a constructive limitation, we chose to frame the speculation around a database. This also meant that we might ultimately confront the challenge of integrating with—or contributing to the evolution of—existing digital systems (e.g., Google Scholar).

BACKGROUND

The work presented here began in a pictorial by three of the authors that was never published (*Fig 1*). It was rejected from several peer-reviewed Design-oriented publication venues (ACM DIS2021, IASDR2022, and DRS2022).

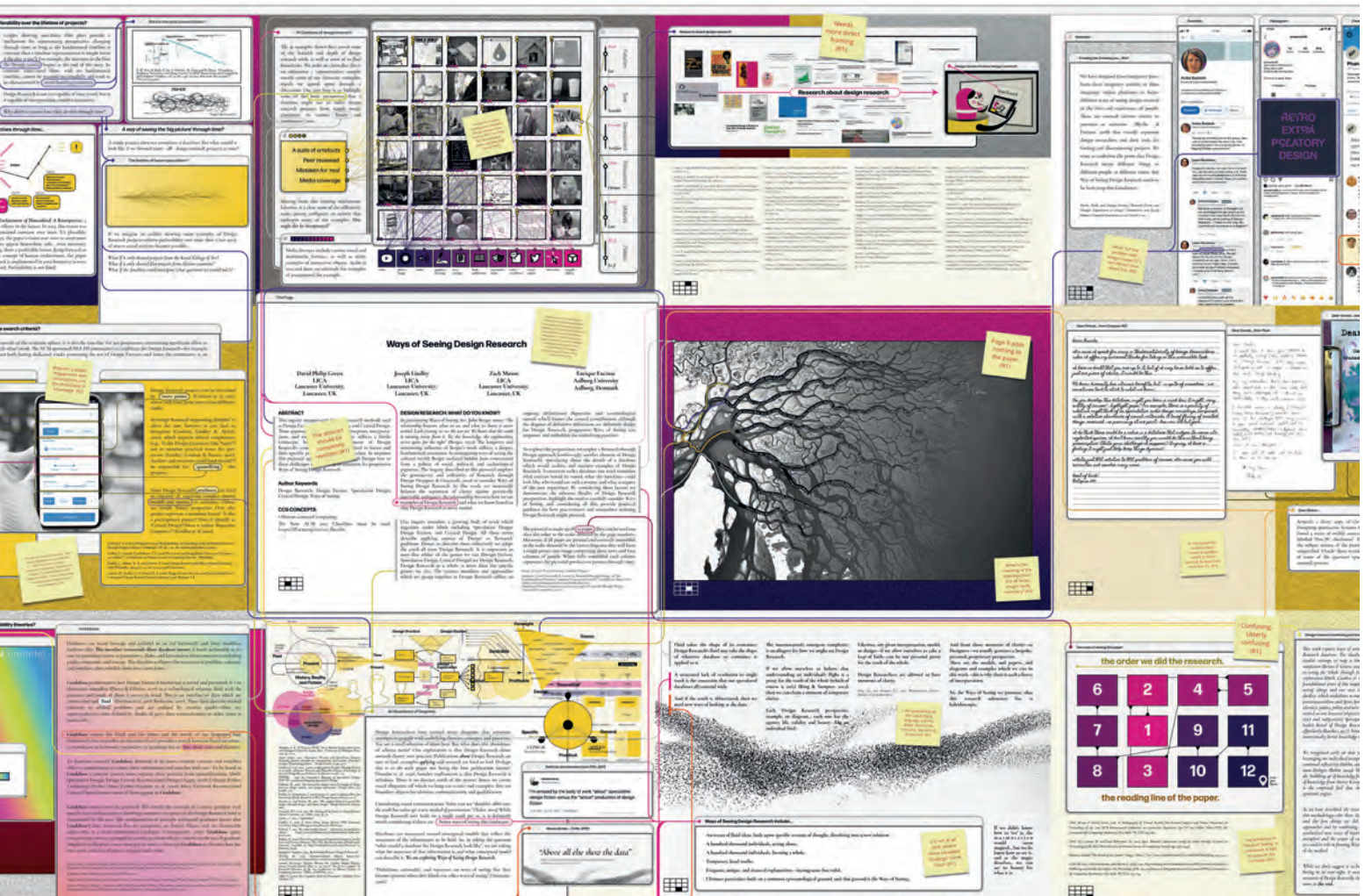


Fig 1 – an overview of one iteration of the unpublished pictorial (not intended to be legible at this scale). The depiction here shows an assembly of the 12 pages as a visual collage. The grid on the bottom right shows two possible “ways of seeing”.

Craft] __ [Sustainability

It received divisive reviews on all three occasions. We subsequently showcased a version of the work at the Uroboros Festival, in a presentation that included some reflections on the reviews and the reasons given for its rejection(s) (e.g. “*R1 wonders if the paper is academically sound.*”)

The initial aim of the original pictorial was to explore the same challenge that we are exploring here: the challenge of representing the field of Design Research in an interactive repository. We began with three speculative designs (#1, #2 and #3 below), which we developed separately and then brought together as the basis for discussions. Through these discussions, we developed a framing and an extended commentary that brought together elements of poetry, photography, graphic design, data visualisation (Fig 2) and fiction – including correspondence with a fictional ‘oracle’.

“WAYS OF SEEING”

The concept for the pictorial was that it could be read in two ways: *both* as a standard linear paper *and* as a visual collage. The paper could be assembled into a form that revealed a map of connections between ideas in the paper. Hence, we made our argument in two ways; firstly, through the content of the pictorial and, secondly, through its form, which was intended as a visual metaphor for multiple “Ways of Seeing” (Berger, 2008), drawing also upon the postmodern media philosophy of Marshall McLuhan, for whom, “*the medium is the message*” (McLuhan & Fiore, 1967).

Uniting these ideas, our epistemological stance was that form, content and interpretation combine to create fluid meanings within Design Research. Some of the reviewers of the pictorial felt our message was obscured by these ‘meta’ reflections. Others didn’t accept the visual style we adopted. Nevertheless, with the insights gained from our previous failures, we resolved to try and publish a version of the work again. Our latest, revised, and expanded attempt to convey the work is what follows.

METHOD

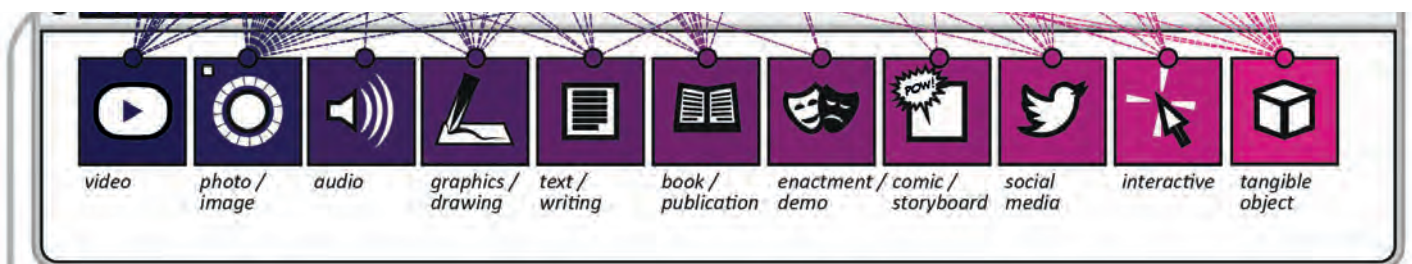
This exploratory paper returns to the original aim of the earlier pictorial: to consider an interactive repository of Design Research data. What follows is an (updated) suite of six speculative designs, one by each of the six authors of this paper, all of whom are designers, and/or researchers and/or design researchers. The first three designs are edited versions of those from the original pictorial. The last three designs were produced in response to the same idea (with the first three designs and the pictorial made available as examples). In other words, designs #4, #5, and #6 can be considered as ‘responses’ to designs #1, #2, and #3. However, they are also discrete, novel concepts.

For the purposes of communicating the work as clearly as possible here, we have abandoned most of the creative flourishes from our previous pictorial. The lead author of this paper has also edited the six ideas into a consistent presentation format. The designs are all thought experiments. They are not intended as concepts for development, but rather as explorations of an opportunity space. We did not stipulate who the database should be for, nor what its purpose should be.

POLYPHONIC SPECULATION

We call our approach ‘polyphonic speculation’. In doing so, we draw on the concept of “polyphony” (Bakhtin, 1984) and appeal to ‘the wisdom of the crowd’ for insights that might otherwise elude us as individuals. Specifically, we invited multiple responses to our shared brief and used the designs to stimulate discussion.

The approach draws upon our earlier pictorial, but it also introduces an element of dialogue through iteration. It finds common ground with recent work by Elsdon et al (2022), which used a similar ‘polyphonic’ approach. By inviting speculation based on a short brief, we sought to frame discussions around plausible futures. Our aim was to facilitate a collective imaginary about a repository of Design Research and discuss it. We also draw upon the traditions of ethnomethodology (Firth, 2022) that values the reflections and perspectives of researcher(s), who in this case also act as designers.





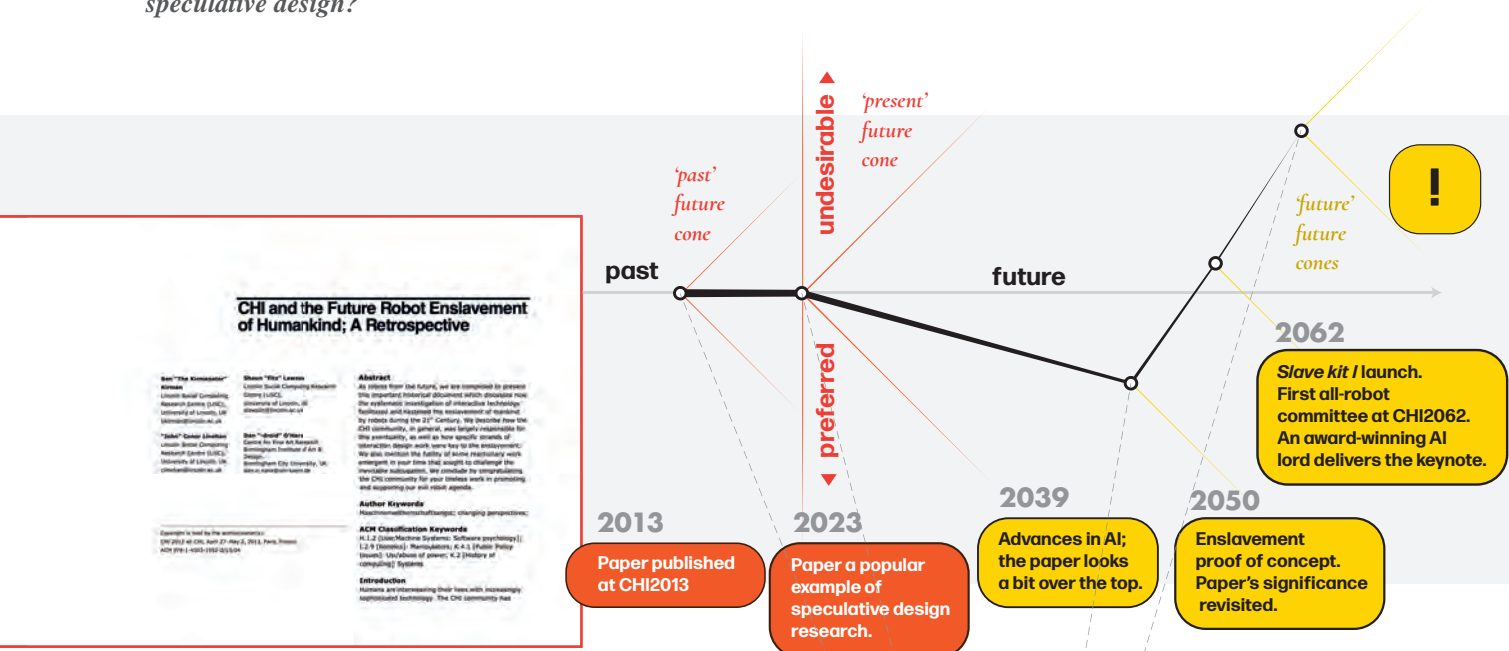
#1 of 6

What if the database mapped preferability over time?

Graphs showing non-linear film plots depict changes through time. When the timeline is constant, this is simple (even if the plot is not!). In contrast, time-travel films, with shifting timelines, tend to be characterised as paradoxes (right). Speculative Design Research often considers the future, but it builds upon and reflects our interpretations of the past.... *As imagined futures turn to parallel pasts, do we have the tools to make sense of the ageing corpus of speculative design?*

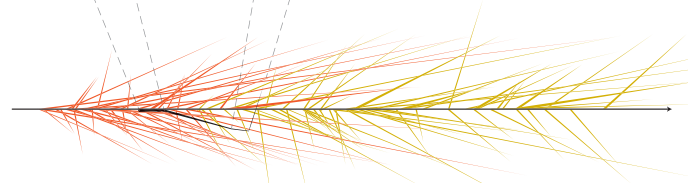


Primer (xkcd.com/657)



A feather of (retro) speculation?

What would it look like if we showed many - or all - Speculative Design projects at once? Using the 'futures cone' as a basis for a visualisation - enables a vast array of macro trend analyses...



Obviously Fiction

#2 of 6

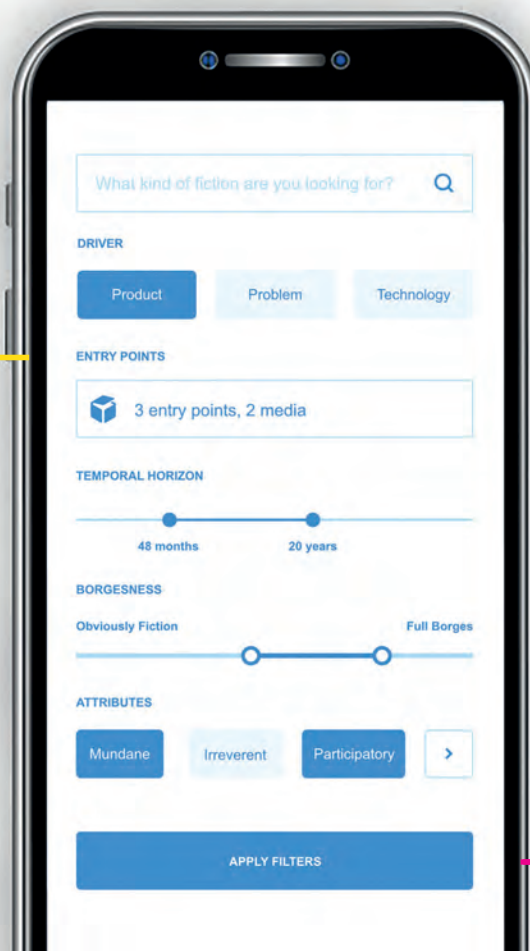
What if the database used search criteria like "Borgesness"?

Academic researchers are some of the keenest proponents of Design Research. The ACM sponsored SIGCHI community is a trailblazer for Design Research and the community commits significant effort to producing, reviewing, and observing each other's work.

A lot of Design Research has been published at ACM conferences. It can all be found in the ACM's Digital Library (dl.acm.org) but it isn't easy to get it out. *If the relevant contents were appropriately marked-up with relevant metadata, what might the interface look like?*

Entry points

Design Research projects can be described by 'entry points' where each entry point may utilize different media. *How might we reference, quantify and qualify these different entry points and what metrics are likely to be informative to users?*



Full Borges or Fake News?

In Design Research, 'suspending disbelief' is often the aim, but it can lead to deception, which imports ethical complexities and practical issues for peer review. *Should authors and reviewers be responsible for quantifying this property?*

#3 of 6

What if the database wasn't driven by usability theories?

Gradabase transcends database norms and lends authorship to users by providing access to parameters, sliders, and keywords within constraints including pixels, commands, and storage. *What would it mean if the structures of problem, solution, and interface were collapsed; rebuilt in a new form?*

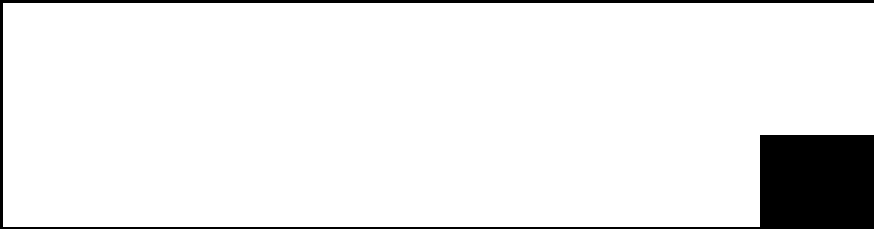
Gradabase is an alternative metaphor to a technological solution, built to reflect the practices and needs of those it serves. It is an interface to data which are constructed and fluid. These 'data' describe wicked solutions to wicked problems; super-qualitative data defined by shades of grey; their rationalization in other terms is intractable.

LAYER 0



LAYER M (middle)

To function correctly, Gradabase demands of its users - content creators and searchers alike - a commitment to colour their submissions and searches with tact. To be listed in Gradabase a content creator must separate their practice from monochromatic labels like "Speculative" or "Critical" - labels do not appear in Gradabase. Gradabase entries must be gradated. This entails the creation of a colour gradient with specific hues and saturations denoting resonance to aspects of the Design Research field as determined by the user. The amalgamation of multiple submitted gradients means that Gradabase's data structure has no categories, no binary filters, and no discernable edges. This is a multi-dimensional catalogue. Consequently, every Gradabase query returns many entries, arranged in a results gradient which is relative to the search gradient. Simplicity is the price a user must pay in order to leverage Gradabase to discover how her own work, and that of others, relate to each other.



#4 of 6

What if the database banned words like ~~usability~~ ?

Knowledge is power. Unfortunately, this means concepts like “expert knowledge” can legitimize some groups' interests over others; comonly favouring the already-powerful, as opposed to people in subaltern positions. “The Book of Forbidden Words” draws upon this premise to critique the use of “expert language” in Design Research reporting.

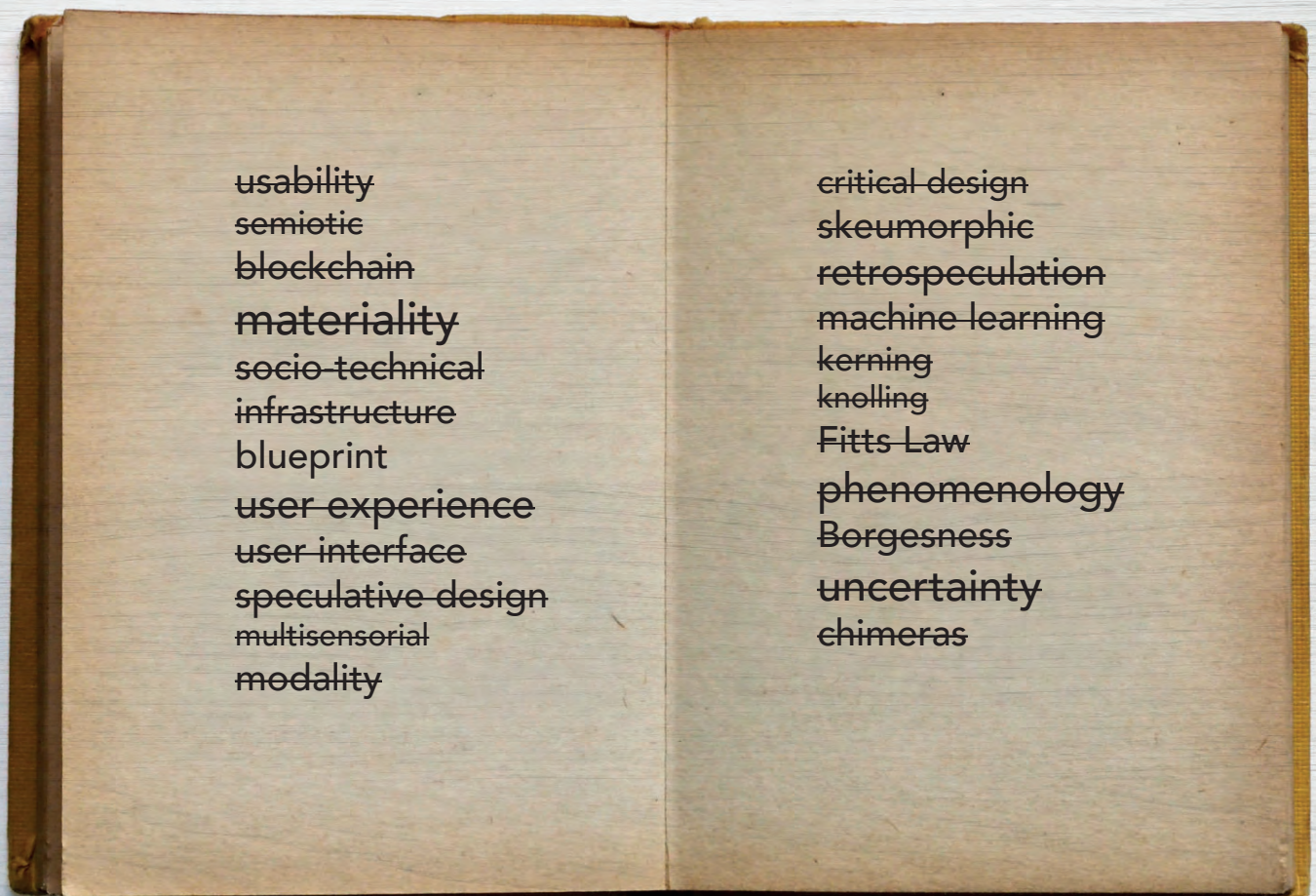
The Book of Forbidden Words is a platform where anyone can upload their Design Research, but every time a “forbidden” word is used - or even an expression to explain such a word - the database sounds its patented “bullshit detector”.



Which words are forbidden?

~~usability~~
~~semiotic~~
~~blockchain~~
~~materiality~~
~~socio-technical~~
~~infrastructure~~
~~blueprint~~
~~user experience~~
~~user interface~~
~~speculative design~~
~~multisensorial~~
~~modality~~

~~critical design~~
~~skeumorphic~~
~~retrospeculation~~
~~machine learning~~
~~kerning~~
~~knolling~~
~~Fitts Law~~
~~phenomenology~~
~~Borgesness~~
~~uncertainty~~
~~chimeras~~




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design science; cognitive modelling; images

design materials; materiality; machine learning

design research; machine learning; photography

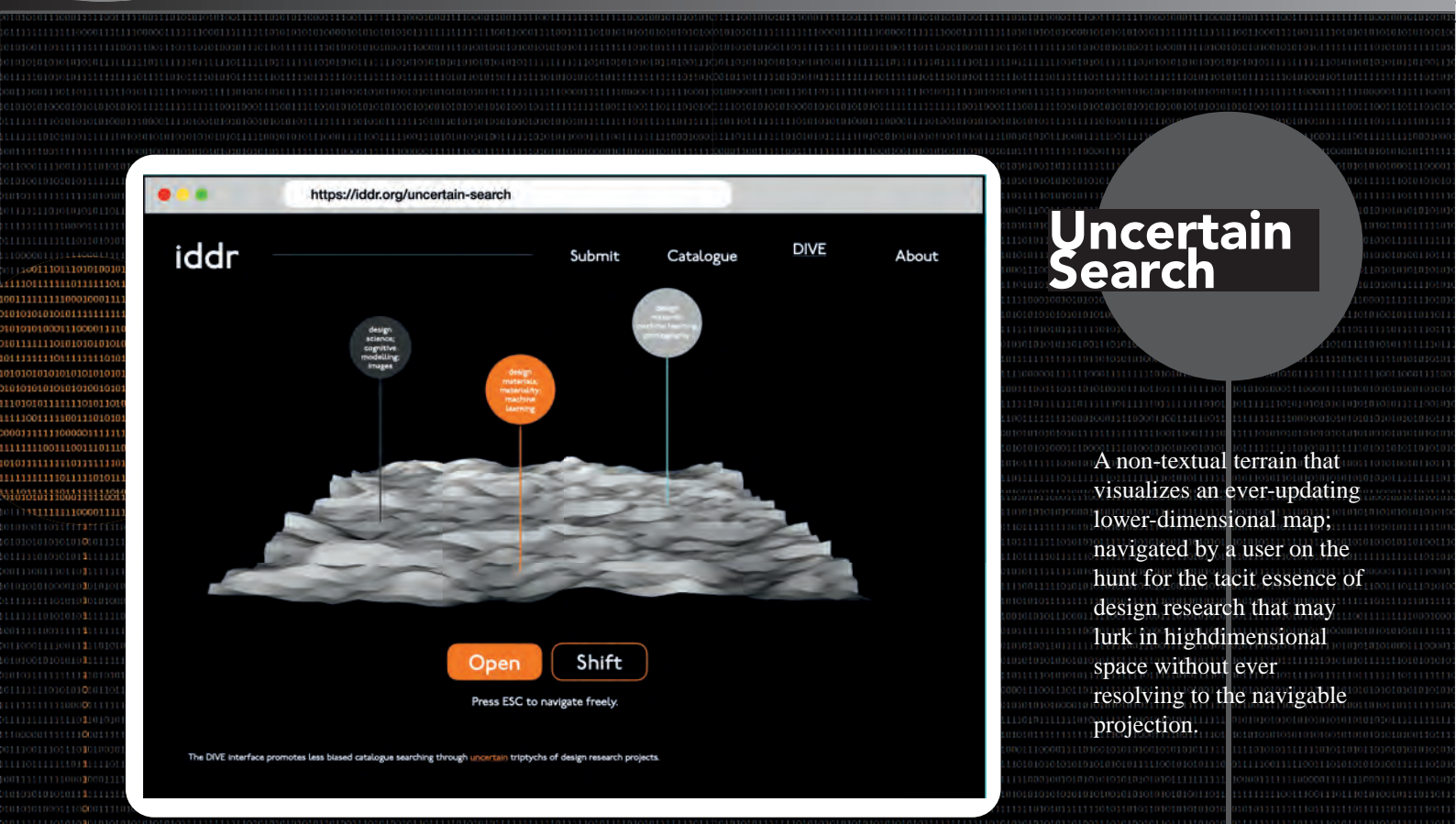
#5 of 6

What if the database utilised informatic uncertainty?

Probabilistic technologies such as machine learning are becoming increasingly mainstream (Benjamin et al, 2021), so perhaps now is the time to harness the power of ambiguity (Gaver et al., 2003) or “uncertainty” to explore the field of Design Research? The “curse of dimensionality” (Chen in Ling and Öszu, 2009:245)

suggests complexity can be daunting, but Gurban and Tyukin (2018) argue that, on the contrary, as interrelationships proliferate and complexify, “the laws become simpler.”

Eschewing specificity, can we trust a probabilistic model to reveal the essence of Design Research through tacit connections?



https://iddr.org/uncertain-search

iddr Submit Catalogue DIVE About

design science; cognitive modelling; images

design materials; materiality; machine learning

design research; machine learning; photography

Open Shift

Press ESC to navigate freely.

The DIVE interface promotes less biased catalogue searching through uncertain triptychs of design research projects.

Uncertain Search

A non-textual terrain that visualizes an ever-updating lower-dimensional map; navigated by a user on the hunt for the tacit essence of design research that may lurk in highdimensional space without ever resolving to the navigable projection.



#6 of 6

What if the database mapped RtD chimeras?

Design, and Design Research by extension, is in its core a multidisciplinary and pragmatic endeavor. As such it tends to fill the borders between existing and established fields. Research through Design (RtD) is a tool that can bridge seemingly irreconcilable disciplines through creative synthesis. This concept proposes the clustering and mapping of the diverse work undertaken in different fields of Design Research. The map aspect as an interface for visualising information aims to provide a novel perspective

of Design Research and Design Researchers. Seeing the different research outputs in relation to each other and the areas that they populate, from the fertile plains of HCI to the plateaus of Pragmatism. In addition the interactive map has the capacity to illustrate the journey through these areas of each design research in time. Just like medieval maps chimaeric monsters lurk in the borders, edges and uncharted waters.



Do we feed and tame or slay these monsters?

"...their flesh is a synthetic meat..."

The Butcher of Cartadesina

FINDINGS

The six designs all present different ideas for a database of Design Research.

#1 combines graphical film plots and the futures cone (REF) in a temporal framework, framed by the question, “*what if the database mapped preferability over time?*”

#2 is an app interface with novel search parameters, framed by the question, “*what if the database used search criteria like ‘Borgesness’?*” (after Jorge Luis Borges, the Argentine postmodernist).

#3 eschews categories and labels in favour of a fluid gradient metaphor, framed by the question, “*what if the database wasn’t driven by usability theories?*”

#4 is a “book of forbidden words”; an experiment in creative censorship, framed by the question, “*what if the database banned words like usability?*”

#5 is an interface that leverages uncertainty via machine learning, framed by the question, “*what if the database utilised informatic uncertainty?*”

#6 is an imaginative map of the hybrid forms of Design Research, framed around the question, “*what if the database mapped RtD chimeras?*”

There are many differences in form, presentation, and content. Some are closer to thought experiments, while others have more detailed interface elements. In the discussion below, we highlight two key challenges that came out of our discussions that—we argue—combine to form a *causality dilemma* that may be inhibiting the field of Design Research.

DISCUSSION

CHALLENGE 1 – REFLECTING THE DIVERSITY OF DESIGN RESEARCH IN A REPOSITORY.

Design Research is defined by *diversity*. It incorporates multiple “ways of seeing”. This manifests in the form of diverse materials (cf. *Fig 2*), diverse *combinations* of materials and diverse *connections* between materials. Our work suggests that there are also at least three other dimensions to this diversity: a diversity of *perspectives*, diverse *contextual factors*, and diverse *interests*.

I - DIVERSE PERSPECTIVES

All six designs reflect the co-existence of diverse perspectives in Design Research. #1 considers how perspectives change over time. #2 describes “entry points”, where different media offer complementary perspectives on a project’s speculative ‘world’. #3 includes both contributor and user perspectives in its interpretative device of ambiguous “gradients”. #4 critiques the way language can subtly prioritise certain perspectives over others. #5 introduces the notion of a

machine learning algorithm – a probabilistic high-dimensional perspective on the data that is unattainable to humans. #6 presents mystical monsters as metaphors for the hybrid perspectives of multi-disciplinarity.

Diverse perspectives are a common feature of research *review* processes, but they are not commonly foregrounded in research *reporting*, which typically prefers to present a consensus view. Yet the co-existence of multiple perspectives in Design Research is fundamental to the kinds of knowledge it generates.

What if the plurality of multiple perspectives was a core feature of the database?

II - DIVERSE CONTEXTS

Some features of our designs, such as the “feather of retro-speculation” (#1) and the “temporal horizon” (#2) highlight differences between the contexts in which Design Research data are collected and the contexts in which they are accessed. Some designs situate their records in the context of other Design Research work. #1, #3, #5, and #6 use various kinds of ‘map’, each with differing underlying logics, but all designed to situate projects *in relation to* other projects. This shared concern for contextuality suggests Design Research might need to be understood ‘in relation to’ other work. Traditional research publishing communicates these relationships through citations, but our ideas call for something more dynamic and nuanced than a static page of references.

What if references to other work were dynamically adaptive to emergent contexts?

III - DIVERSE INTERESTS

Some of our database designs call for specific domain knowledge, such as familiarity with the futures cone (#1), or a willingness to engage with complex concepts (#2) such as “uncertainty” (#5) and “chimeras” (#6). Other designs are critical of exclusivity (#4) or even ‘specificity’ altogether (#3). #4 directly critiques the role of language in making Design Research exclusive. Elsewhere, the critiques are more subtle (e.g., we all assumed that the repository was in English). #2, #3 and #5 all suggest, in different ways, that written or verbal language may not be an entirely appropriate search paradigm for Design Research. Although search boxes are included in some of the designs, #2 includes continuous slider inputs between abstract parameters that tease the limits of how we tend to interact with research datasets. #3 and #5 incorporate user-determined and machine-driven uncertainty respectively to undermine the primacy, and perhaps circumvent the limitations, of language as a search tool.

A feature of each of the designs, which could help to resolve this tension between ‘specificity’ and ‘ambiguity’ is the use of *metaphors*: The gradient as a

visual metaphor for the absence of concrete labels; forbidden words as a metaphor for radical exclusion criteria; chimeras as metaphors for cross disciplinarity and hybrid epistemologies. Metaphors can attenuate the negative effects of ambiguity by having a clear intention and room for interpretation.

What if the database leveraged metaphors to balance the uncertainties and specificities of Design Research?

CHALLENGE 2 - CAPTURING CONTEXT(S) DURING THE DESIGN RESEARCH PROCESS.

It was not our intention that our ideas should (or could) be implemented into functioning products or services, but it is notable that all would be impossible to implement without metadata that are not routinely collected during Design Research processes. Current Design Research practices do not capture information about the specific coordinates of the diversity of perspectives, contexts, connections, and interests involved in the research process or its outcomes. Might this highlight a shortcoming in our reporting processes? Should we be more proactive in our efforts to acknowledge and represent plural perspectives, and/or dynamically generate connections to other work? Can *metadata* be *metaphorical*? What additional data would we need to capture to make a repository viable?

There are multiple dimensions to consider. Indeed, #5 alludes to “the curse of dimensionality” (Chen, 2009). In one sense, this reflects the fact that Design Research is a broad church. It also reflects the difficulty of making the field accessible, as it can be challenging to compare individual projects to other – often disparate – projects in a typical database format.

Let’s consider, for a moment, the nature of the ‘records’ in our imaginary repository. In conventional database designs, records tend to be discrete, equivalent units. For example, for Google Scholar, each record is ‘a publication’ (e.g., a paper or a book). Most of our designs assumed that each record in the repository would be ‘a research project’. However, if we expand the focus, so that each record is ‘a research program’ (c.f., Gaver et al, 2022), we then encounter individual projects only in the context of a wider body of work. Emphasising the connective tissue *within* research programs - *between* research projects in this way could enrich the dataset with detailed contextual information.

Focusing on ‘research programs’ could also help attenuate the dimensionality problem, and perhaps legitimise more honest, less ‘positivistic’ accounts of research processes. We included the detail of our failed publications above as an attempt to demonstrate how unflattering details about process are commonly lost in constructed visions of coherent research. We habitually devalue the manifold “loose ends” (Goveia et al, 2022) that are often so informative to our process.

Future work might look at ways to place more value and emphasis on the processes, through-lines, connections, and contexts of Design Research, and how to make these elements more visible in databases and throughout the research publishing process.

A CAUSALITY DILEMMA

The two challenges we have described here combine to form a ‘chicken-and-egg’ style causality dilemma that is inhibiting the potential impacts of Design Research.

On the one hand, without comprehensive metadata to reflect the diversity of concerns Design Research represents, it is difficult to imagine how a repository can facilitate meaningful discovery and browsing across the corpus of Design Research. On the other hand, without accessible channels for disseminating details about the process(es) and context(s) of Design Research, there is a lack of structure to facilitate the collection of these details.

We contend that this is an important challenge, but it is not one that will be easily resolved. New publication formats might be needed to better reflect the richness and materiality of Design Research. We may also need to adopt more reflective documentation processes, which presents myriad practical challenges that would be prudent to consider in future work.

Our aim here is not to resolve the dilemma, but to raise the issue, ask some probing ‘what if?’ questions and offer some broad-brush suggestions, such as shifting focus from ‘projects’ to ‘programs’. In doing so, our aim is to advance the discourse and contribute some preliminary parameters for new publication vectors for Design Research.

CONCLUSION

The unresolved challenge of representing the diversity of Design Research is holding the back the movement. We need publication channels that are more accessible, more comprehensive, and that give richer insights into the diversity of Design Research work. This is a challenge because these kinds of insights are not routinely captured. We therefore also need new approaches to documenting, archiving, indexing, and sharing Design Research and renewed emphasis on capturing and sharing processes and contexts. Future research should evaluate these ideas and establish strategies to operationalise change.

Finally, we hope that designers, researchers and design researchers will be inspired by our novel approach – ‘polyphonic speculation’ – which, as we have shown, has value as a tool for collectively speculating in relation to complex challenges, through a process of speculative design, dialogue and reflection.



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THE POSSIBILITIES OF GEOPOLYMERS FOR GREENER STUDIO CERAMICS

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ABSTRACT

This paper introduces initial findings from interdisciplinary project-based research concentrating on investigating the potential of using geopolymers in ceramic practices within the context of a university workshop. Geopolymers are examined from the point of view of reducing energy consumption currently needed for studio ceramics and exploring how geopolymers could be used as part of ceramic production and education. The initial findings show that the ceramic workshop and the basic raw materials used for ceramics are applicable when making geopolymers. A material hardened through geopolymerisation can be produced with lower energy consumption compared to traditional processes in ceramics. However, the qualities and the nature of geopolymers are not equal to ceramics, which can limit the usage of geopolymers within the context of ceramics,

but also create promising possibilities for further research. This study opens the discussion on using geopolymers within creative practices.

INTRODUCTION

Ceramics are commonly perceived as a natural and rather sustainable choice as a material for everyday objects such as tableware and utensils because of its qualities. Ceramics, as a high-fired material, is durable and can endure time and erosion so long that ceramics shards found can help to tell the stories of lost cultures from our history. Looking forward in time, contemporary-produced objects will be telling our story when discovered hundreds or thousands of years from now. However, the future looks different; instead of cherishing a found shard of porcelain, the surviving ceramics will be part of waste mountains left behind as a result of overconsumption and reckless usage of resources.

To create a better future, all usages of materials and resources are challenged; further practices and processes need closer evaluation. In this research, we focus on creative practices in the context of ceramic workshops to discover what can we do as creative practitioners and educators to create a more sustainable future when working in the university environment.



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University workshops are used here as a platform not only for research on materials and related processes but also for educators to consider how to facilitate transitions towards more sustainable ways of making. Currently, this aspect of education is recognised as a general topic of interest (Groth & Fredriksen, 2022). This project-based research is conducted among students and other educators, and thus concurrently having an impact within the studio environment when the material investigation is openly carried out.

Regarding contributions to the green transition, a recent survey shows that the most critical aspects in creative fields are energy consumption, transportation, waste disposal and recycling (Tuovinen & Nuora, 2022). In addition, the creative fields are seen to have the power to support green transitions. For example, design can have a valuable role in offering sustainable solutions and models for other fields (Lebedeff & Grekov, 2022). However, the creative fields and related education are also part of the global transition, where alternative sustainable solutions must be found to lower emissions caused by material usage and production processes.

In this, we focus on the ceramic studio setting within Aalto University in Espoo, Finland, and examine the potential for using geopolymers instead of traditional ceramics to lower the energy consumption in creative practice and evaluate the potential of geopolymers as an alternative material in the field of ceramics. This paper discusses the initial results and also envisions the future directions and possibilities that the project will continue exploring.

GEOPOLYMERS

This research is based on geopolymers originally developed by Joseph Davidovits (2020). Geopolymers are inorganic polymers consisting of chains of mineral molecules linked with covalent bonds; they take advantage of chemically reactive materials in alkaline or acidic medium to form new compounds for various applications (Davidovits, 2020, 4).

Although Davidovits is considered the inventor and developer of geopolymers, there are examples in our history showing that similar materials, which could be called geopolymers, were used already thousands of years ago. For example, Romans used a form of concrete that outlasts contemporary concrete. Roman concrete is a mixture of volcanic ash and quicklime. Seawater contact seems to make it even stronger than at the time of mixing (Guarino, 2017). An alternative type of concrete was also developed in Ukraine in the 1950s due to a shortage of raw materials. This resulted in a type of geopolymer that was used to construct buildings (Partanen, 2022). Davidovits et al. (2019) also point out discoveries suggesting that ancient megalithic structures in Bolivia could have been made of a type of geopolymer made of volcanic tuff 1400 years ago (see Figure 1).



Figure 1: Megalithic structures at the archaeological site of Tiahuanaco, Bolivia, geopolymer made of volcanic tuff 1400 years ago. Photo: Ralph Davidovits, 2018

In our study, the type of geopolymer investigated is made of a mixture of silicates and alumino-silicates in alkaline medium, forming a resinous binder into which a wide range of inorganic and organic materials can be added as fillers (see Figure 8).

These nanomaterials were first developed by Professor Joseph Davidovits in the early 1970s and in 1975 creating the first liquid binder based on metakaolin and soluble alkali silicate at CORDI laboratory for insulating purposes. The addition of sodium silicate brought improvements to the mixture in terms of hardening speed, which allowed additional applications in high-tech ceramics and cement (Davidovits, 2020, 8). Later on, Lone Star Industries Inc. developed a new cementitious product by adding ground blast furnace slag, which brought improvements in setting time and compressive strength (Davidovits, 2020, 10). In 1987, heavy metal encapsulation of uranium mine tailings was successfully tested using a geopolymeric cement in Germany (Hermann et al., 1999).

From 1990 onwards, major emphasis was dedicated to low CO₂ cements based on geopolymers, given the growing need to develop environmentally friendly technologies. Concerning the potential of geopolymers to reduce CO₂ emissions, a thorough carbon footprint study compared the difference between Portland and geopolymer based cements, showing that the latter produces at least 9% less greenhouse gas emissions than conventional cements (Turner & Collins, 2013). This figure on a global scale makes this new technology a suitable candidate for carbon dioxide reduction, not to mention the diverse applications in which geopolymers can be used.

Besides the above mentioned, we can list some novel applications: wastewater treatment (Grba et al., 2023), dye adsorbents (Tochetto et al., 2022), additive manufacturing (Raza & Zhong, 2022), 3D printing (Zhong & Zhang, 2022), carbon capture and storage (Freire et al., 2022), energy conversion (Sánchez Díaz & Escobar Barrios, 2022), antibacterial cements (Rubio-

Avalos, 2018), etc. The current trend and future vision of the geopolymers field is to promote innovative and eco-friendly materials. To achieve this, the approach is to take byproducts and residues from other industries as secondary raw materials to elaborate new products, in other words, a "Circular Economy" perspective.

Some residues, such as blast furnace slag, coal fly ash or mine tailings, can be used as binders or fillers, so their use in their respective value chains can be extended, and their disposal can be reduced. To take geopolymers-based concrete as an example, a recent study showed that this new material contributes to 12 of the 17 sustainable development goals (SDGs) established by the United Nations (Shehata et al., 2022). However, in order to promote the use of geopolymers in the industry, it is necessary to address some technical and economic issues that will guide the direction of geopolymers research. Some of these challenges were listed in an article published by Zhao et al. (2021): development of cheaper or novel reagents, improvements in workability, regulation of hardening rate, in-depth analysis of the reaction mechanism, long-term properties, etc.

In summary, this new nanomaterial has demonstrated good potential to be used in various industries as an eco-friendlier technology than many currently used. However, in this research, we have considered geopolymers in the context of studio ceramics and thus widened the potential of geopolymers as a greener choice also in the context of creative practices.

This research opens the common points of contact between scientific research and the creative fields through the topic of geopolymers and highlights matters that require further investigation.

MATERIAL EXPLORATION

In our project, the aims of hands-on material research are three-fold. Firstly, as creative practitioners, it is crucial for us to gain a better understanding of geopolymers and their properties on a concrete, practical level so that evaluation on the further usability of the materials in the context of studio ceramics can be made. Secondly, we are looking into potential ways of utilising existing materials and facilities in a studio setting for producing geopolymers and coming up with new materials. Lastly, we aim to find means of using the knowledge gained to further the transition towards greener practices creating a more sustainable future.

Our approach to these matters follows the practices of material research in the field of ceramics. The methodology is largely based on the making of test samples, similar to the testing and developing clay bodies (Levy et al., 2022, 63-77), observing the properties and changes in tested materials during different stages of the overall process, and examining

the results from the perspective of a designer applying the findings into real-life usage.

In this paper, six different geopolymers test samples are introduced. They all contain a similar binder, based on the reaction of sodium silicate and metakaolin (MK750). Metakaolin as used in our study is produced by calcining kaolin at 750 degrees Celsius for 3 hours, which is described as the standard set by the Geopolymer Institute (Davidovits, 2020, 159). Calcining refers to the process of thermally treating inorganic material to remove volatile components, and to improve the processing characteristics in various operations (Rand, 1991); simplified, in our study it is used to increase reactivity (Badogiannis, 2005). Research into alternative materials to replace energy-intensive ingredients such as metakaolin is part of our research; however, it is outside the scope of this paper. Instead, the focus here is on testing various filler materials and their properties, so the binder remains the same. The following materials were tested as fillers: chamotte, two variations of local Finnish iron-rich clay, volcanic rock, Finnish potassium feldspar, and porcelain waste (see Figure 2). A breakdown of the chemical components in each filler material is listed in Table 1.



Figure 2: Selected geopolymers test cubes. Clockwise from the back: calcined Finnish clay, raw Finnish clay, chamotte, volcanic rock, feldspar, and porcelain waste. Photo: Johannes Kaarakainen, 2022.

Information on chemical compositions is provided to allow for comparison between the used materials, and for evaluating practical findings from the standpoint of chemistry. It is worth noting, that the oxide analyses for some of the materials, namely raw Finnish clay and porcelain waste, are only indicative, since they represent entire categories of materials which, depending on location and availability, would have variations in their contents. Values for raw Finnish clay are for the average chemical composition of Finnish clay (Volhard & Westermarck, 1994, 27). Values for porcelain waste are derived from a classic recipe of typical porcelain (Jylhä-Vuorio, 2020, 23). Information on volcanic rock, feldspar and chamotte is gathered from the respective



product datasheets. Values on the calcined Finnish clay from Somero, Finland, are based on its chemical analysis (Hortling, 1992).

Table 1: The percentages of the chemical components of filler materials. 1: raw Finnish clay, 2: calcined Finnish clay, 3: volcanic rock, 4: potassium feldspar, 5: chamotte, 6: porcelain waste.

Compound	1	2	3	4	5	6
SiO ₂	58.6	50	43.7	68.3	74.0	72.1
Al ₂ O ₃	16.0	17.1	13.9	18.0	20.5	21.5
Fe ₂ O ₃	5.42	9.0	11.1	0.01	1.0	0.40
MnO	0.11	n/a	0.19	n/a	n/a	n/a
MgO	2.81	3.3	9.31	0.02	0.40	0.10
CaO	2.17	1.5	11.7	0.09	0.20	0.10
Na ₂ O	2.65	2.0	2.92	5.05	0.20	0.10
K ₂ O	3.27	4.2	3.33	6.02	2.50	5.20
TiO ₂	0.69	n/a	2.74	0.05	1.20	0.40
Organic	0.87	n/a	n/a	n/a	n/a	n/a
Others	7.28	12.9	0.98	2.40	n/a	n/a

The procedure of making the geopolymer mixes has been consistent. It follows the pattern of first mixing the binder in a planetary mixer for 10 minutes. After which, the filler material is added and mixed for another 10 minutes. Then, the slurry is cast into a cube-shaped 5 x 5 x 5 cm silicone mould, vibrated to help the material degas and spread evenly, and covered in an airtight container. Finally, the covered test pieces are placed in a kiln for either 4,5 or 24 hours at a temperature of 80°C. The curing times follow Davidovits’ findings on the relativity of compressive strength and curing time, and the phases in which the material has reached its highest achieved level of strength (Davidovits, 2020, 178).

For the initial tests, a cube-shaped mould was chosen mainly for practical reasons: casting numerous samples of geopolymer mixtures with viscosities varying from liquid consistency to very stiff paste required an easy-to-cast shape for the repetitive process to be done efficiently. In addition, the reasoning was that a non-complex shape would allow for a better comparison of material properties instead of drawing attention to the design of the sample piece. Simple shape with smooth surfaces also makes it easy to observe changes that sometimes occur during and after curing, such as appearing of cracks and deformations. More complex shapes were planned to be tested at later stages in the project after having done an initial selection of promising geopolymer recipes.

Silicon as a mould material was ideal for various reasons. It is airtight and prevents the unwanted evaporation of moisture, it is flexible and allows for effortless un moulding of the hardened piece, and it is

easy to clean from the geopolymer residues that stick tightly to many materials.

In the following, all the tested materials are discussed individually. First, the material is introduced, and its origin is disclosed. Then, practical findings from during the making of the sample are briefly examined. Finally, an initial evaluation on the usability of the materials for geopolymers is provided.

CHAMOTTE

Chamotte, also known as grog or firesand, is calcined clay that contains high amounts of alumina and silica. In ceramics production, it is used for reducing shrinkage and cracking, and to give texture and structural strength for clay bodies. For the geopolymer sample, chamotte of grain size 0-0.5 mm was used, and it is manufactured by Sibelco with the product name FSN.



Figure 3: Sample with chamotte as filler. Photo: Johannes Kaarakainen, 2022.

In use, chamotte performs well as a filler. Depending on the amount used, it can result in either a rather liquid or moderately stiff mix. Based on material testing, the range of particle sizes from fine dust to small grains seems optimal in terms of both usability and the end result. At 0–0.5mm grain size, the filler is coarse enough to provide structural stability but reproduces fine details and smooth surfaces well (see Figure 3). A white or light grey chamotte can also be colored with pigments and metal oxides, for example.

The chemical composition of chamotte bears a close resemblance to porcelain. In our research, chamotte was the first filler material to be tested and its performance gave some indications on how materials such as finely ground high-fired porcelain waste, which was later tested as well, could be made of use as geopolymer filler materials.

While chamotte seems to be a well-suited for geopolymers as a filler, its use does not particularly advance the movement towards greener practices in ceramics production. Chamotte is a material that needs considerable amounts of energy to manufacture. The chamotte used for our tests has been calcined at

1200 °C, but depending on the product, calcination temperatures can reach up to 1600 °C degrees. As the proportion of filler in a geopolymer mix is high, waste materials of similar chemical composition, such as high-fired porcelain, would be preferable to using chamotte in geopolymer applications. That said, from the perspective of availability and usability in a studio context, chamotte is a viable option.

RAW FINNISH CLAY

In Finland, ceramics production built around locally sourced materials has relied on low-fired earthenware products such as bricks. This is because the vast majority of natural clays found in Finland represent a type of red clay that typically is of Nordic glacier origin (Jylhä-Vuorio, 2020, 38). It is high in iron content and fires into a reddish-brown colour. It is widely available, especially in coastal areas of Southern and Western Finland (Hyypä, 1980, 4).

A great impact on the CO₂ footprint could be achieved by using waste clays and crushed rock produced in local construction sites and other nearby industrial wastes. For example, in Finland, the amount of waste clays is growing, and landfill areas are rare, especially in metropolitan areas (Härmä et al., 2010, 34). Large masses of clay are constantly relocated from construction sites, and natural clay becomes waste that has to be relocated to the dumpsites on the outskirts of urban areas. While the natural clays may be too impure for industrial needs, for geopolymers, these aspects of natural clay are not a problem. On the contrary, the constant flow of unwanted material away from construction sites and the difficulty of finding places for disposal would mean an easy way to acquire raw material (see Figure 4). In addition, since geopolymers are not fired, the relatively limited heat resistance in comparison to high-fired clay materials is also not an issue.



Figure 4: Deposits of natural clay can be found from an open construction sites. Material used for the raw clay sample was extracted from this site at Otaniemi, Espoo, Finland. Photo: Priska Falin, 2022.

In the project, the usability of these types of waste clays was tested with a local material. The material used for making the sample with raw clay was acquired from a natural clay deposit at a construction site on the premises of Aalto University. Prior to use, the clay was prepared by sieving and milling (see Figure 5).



Figure 5: Sample with raw Finnish clay as a filler. Photo: Johannes Kaarakainen, 2022.

At the time of mixing, the material turned out to be very challenging to handle. When the dried, finely milled clay powder was introduced to the binder in a planetary mixer, it quickly absorbed the liquid and formed into small, dusty clumps and grains that were difficult mix. After a small addition of water and manual effort to break down the largest chunks, the material eventually formed into a stiff, sticky paste that was very difficult to cast in a mold due to its high viscosity.

This behaviour can be explained by the flat, hexagonal shape of clay particles, which results in the malleability of plastic clays (Jylhä-Vuorio, 2020, 33). Small amounts of water considerably increase friction between the particles, making the mix stiff. Substantial amounts of water would be needed to lubricate the contact surfaces of these particles sufficiently for the ideal viscosity for casting. However, this is not a solution, as excess water decreases the compressive strength of geopolymer material (Davidovits, 2020, 464). While the material has yet to be properly tested on its mechanical strength, it resembles some of our earlier test samples which did not harden properly. It has a relatively brittle feel and a matte surface texture.

Our initial hypothesis was, that these qualities might be explained at least partly by the considerable iron content of the clay. It has been suggested by Essaidi et al. (2014) that presence of iron can affect the compressive strength of the material adversely. However, Davidovits implies that the role of iron is a controversial matter, and it is unclear how it really functions in geopolymers (Davidovits, 2020). The more successful results with calcined Finnish clay, and another promising sample with over twice the iron content (see Table 1), volcanic rock, do not seem to be in line with the original



hypothesis. That said, these are initial tests, and further research should be done to validate the results.

In addition to the presumed inferiorities with mechanical strength, the inconvenience in the difficulty of mixing is also noteworthy. It gives some early indication that raw plastic clay might not be an optimal material with metakaolin-based geopolymer binders, especially for methods such as casting.

CALCINED FINNISH CLAY

After the attempt at using raw milled clay as a geopolymer filler, with unsatisfactory results, another test was made with calcined Finnish clay (see Figure 6) of relatively similar chemical composition. The clay used in the sample is from Somero, Finland.



Figure 6: Sample with calcined Finnish clay as a filler. Photo: Johannes Kaarakainen, 2022.

The assumption was that since after calcination, clay particles are no longer in their original shape and organic matter is no longer present, calcined clay might not have the same properties in terms of plasticity, which had made handling raw Finnish clay difficult. Additionally, it was presumed that calcining might make the material more reactive, as is the case with metakaolin. The result with local calcined clay indeed proved to be somewhat better in comparison to raw clay, and it was slightly easier to handle. However, it is probable that calcining to a higher temperature would make a more significant difference.

The properties of geopolymers making use of calcined iron-rich clay are yet to be further researched but based on material testing we can already see that they show some potential. On an industrial scale, waste material from brick factories might be usable for geopolymer applications, and on a smaller studio scale, it is possible that ground earthenware could be used in a similar manner.

VOLCANIC ROCK

The volcanic rock powder used in the test piece was a sort of wild card within the range of tested filler materials. It is neither a material that can be locally

sourced from Finland, nor an industrial by-product or waste. In the research project, volcanic rock was chosen as one representative of non-Finnish natural materials that are abundant in their location of origin, and which in terms of availability, might be a good candidate as geopolymer fillers. This particular material is a commercial product, ready-made volcanic rock powder named Lavamehl 134 from Carl Jäger Tonindustribedarf GmbH, intended for use in ceramic glazes, for example. Due to the colour of the material, we were also curious to see how it would work aesthetically in geopolymer applications.

In use, volcanic rock performed in a similar manner to feldspar, the results of which we will discuss next. When combined with the binder, it formed a thick and viscous paste, which, unlike raw clay, could be considerably thinned with a small addition of water.

The result with volcanic rock is relatively good. The color is greyish purple with a slightly grainy texture (see Figure 7). The surface is shiny and smooth, and the overall feel is very solid.

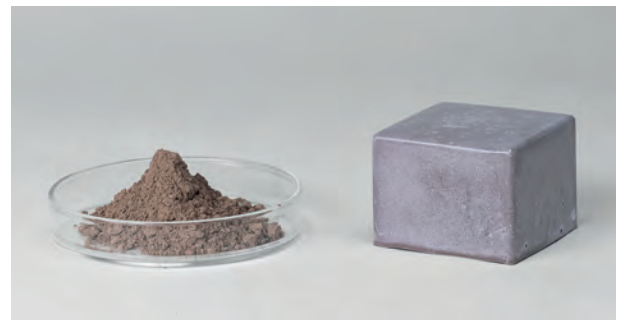


Figure 7: Sample with volcanic rock as filler. Photo: Johannes Kaarakainen, 2022.

While the properties observed during making of the sample piece showed some signs of further potential, the mechanical strength and chemical resistance of a geopolymer material with volcanic rock as filler is yet to be tested. Researching the usability of volcanic rock as a geopolymer material in locations where it is naturally available in large amounts could be valuable.

FINNISH POTASSIUM FELDSPAR

Potassium feldspar, along with other feldspars, is a common mineral in many parts of the world, and widely used in ceramics production. In most ceramic studios, feldspar is one of the most essential stock materials for making glazes, thus readily available. The feldspar used for our tests is a product named FFF K6-60 from Sibelco and mined in Finland.

In the geopolymer mix, feldspar performed well. A slight addition of water was necessary to adjust the viscosity to a more suitable level for casting and to help

the feldspar mix with the binder properly. The fine particle size resulted in a particularly smooth surface on the hardened sample. The pastel pink or orange hue of potassium feldspar was preserved well (see Figure 8). This is a good example of how in geopolymers the original colours of filler materials can be taken advantage of. In ceramics production, feldspar is usually fired up to a temperature where it melts and the colour becomes translucent white or pale yellow.



Figure 8: From left: metakaolin, potassium feldspar and sodium silicate. The cube on the right is a finished sample made with potassium feldspar as the filler component. Photo: Johannes Kaarakainen, 2022.

The availability of feldspar around the world is comparatively good, and its properties match those required of geopolymer fillers. An important characteristic of a good filler is reactivity, which allows the creation of chemical bonds with the binder and results in a higher strength (Davidovits, 2020, 499). Therefore, feldspar can be considered a potential candidate for a filler to be used in real-world applications of geopolymers.

PORCELAIN WASTE

In ceramics production, raw clay is an infinitely recyclable material. Plastic clay is wet and soft, and it becomes hard through drying. Dry clay can be restored to its malleable form by wetting it. This cycle is repeatable, and it makes clay a very efficient material when it comes to making use of leftovers and recycling failed pieces.

However, once clay is fired, its mineral structure changes and it can no longer return to its original state. Broken, hard shards of fired ceramics are usually considered waste material and discarded. This has traditionally been an unsolved problem in ceramics production. Some industrial applications exist, such as recycling porcelain waste resulting from tile production back into making new tiles (Ke et al. 2016) and manufacturing eco-friendly cement mortar from porcelain aggregate (Nasr et al. 2020). Even so, aside from producing chamotte from fired refractory clays,

ways of recycling ceramic waste within a studio context seem to be scarce.

With geopolymers, this material could be restored to use and made into a valuable resource. As described in the case of raw Finnish clay sample, raw clay has plastic properties that make its use difficult in geopolymers, especially with methods such as casting. When clay is sintered, it becomes more suitable for use as a filler material. Sintering is a phenomenon that occurs during firing, in which particles begin to bond tighter to each other, forming a stronger matrix. As a result, the material becomes denser and stronger (Hansen, n.d.). Importantly, sintered clay also no longer breaks down when exposed to water. Since this procedure is energy-intensive, it is not ideal for the sole purpose of creating a geopolymer filler. However, as ceramics industry produces high-fired waste as part of its normal production, a source for suitable ceramic material already exists. For testing recycled porcelain, we used crushed plates manufactured by Iittala (See figure 9).



Figure 9: Geopolymerised porcelain waste and larger fragments of the same crushed ceramic material. Photo: Johannes Kaarakainen, 2022.

Powdered porcelain waste mixes into the binder solution relatively well and achieving a consistency suitable for casting causes no problems. Overall, porcelain waste performs in a predictable, controlled manner, very similar to chamotte. Based on the initial tests, it shows potential for further experimenting and research.

Recycling waste porcelain by using it as a geopolymer filler is a feasible proposition. That said, preparing the ceramic material into a suitable form, grinding it down into a fine powder, can prove challenging in a studio context. While small amounts of ceramic material can be manually smashed into small grains and ground further with a mortar and pestle, milling machinery of some type, such as a ball mill, is needed for reaching smaller, more uniform particle sizes, and for processing larger amounts.



FITTING OF GEOPOLYMERS IN CERAMIC STUDIO

There are some properties in geopolymers which largely define how they can be used. One of the most notable characteristics is the ability of geopolymers to absorb and release high quantities of water (Okada et al. 2009). This is very different from high-fired ceramics, which are typically used for applications where water absorption needs to be minimised or eliminated. Therefore, with geopolymers, it might be difficult to replace ceramics in applications where waterproof and easy-to-clean surfaces are needed. On the other hand, in ceramics production, materials such as plaster are used particularly for their ability to absorb water, for example, in mould-making. Looking into similar existing processes could lead to novel applications for geopolymers.

When considering the use of geopolymers within a ceramics studio context, one key difference between geopolymers and ceramics involves with the drying of the material. In conventional ceramic practice, a carefully controlled drying process is a necessary step between shaping the plastic clay and making the changes permanent through firing in high temperatures. Clay has to be dry prior to firing, as rapidly evaporating water and uneven shrinkage during excessively rapid drying during heating are likely to cause cracks or even explosions in the material.

Conversely, avoiding water evaporation from a non-hardened geopolymer mixture is of critical importance. Successful polymerisation of metakaolin-based geopolymer material requires the presence of free water. It is the medium that carries sodium and/or potassium cations in the silico-aluminate network until they become permanently attached (Davidovits, 2020). In practice, this means that the geopolymer material must be sealed with a film or hydrophobic spray or kept in an airtight container throughout the curing stage, during which the actual polymerisation takes place. Only after this can the piece be dried, which also halts the chemical process that is happening inside the material. This sets some challenges for curing geopolymer material. While the curing temperature is relatively low at around 60–80°C, it still poses some difficulties with some otherwise ideal airtight materials such as plastics, which can become soft and leak.

When considering traditional ceramic practice, where a practitioner engages directly with the material using hands-on techniques, the main quality is the plasticity of the clay when moist (Sutherland, 2005). The plasticity, as an elemental quality of clay during handling, creates a major difference when comparing geopolymers as part of ceramics and creative practices. The utilisation of many traditional techniques in ceramic crafts, such as hand-building or wheel-throwing, are not suitable for

shaping current geopolymers. This is due to the aforementioned need to prevent evaporation of water, poor plasticity and thixotropic properties of the material. Thixotropy is a property of becoming less viscous when subjected to stress such as vibration or stirring. In practice this means that even a seemingly solid piece can as a result of handling lose its viscosity to a point where it collapses. Geopolymers, depending on what raw ingredients are used, behave closer to cement during the production phase than clay. This aspect alone indicates that geopolymers are not to be considered a replacement for the use of traditional clays but as a greener option to use when practicable.

In comparison to working by hand in direct contact with clay, there are also work safety related aspects that make clay and geopolymers very different. In the case of metakaolin and alkali silicate based geopolymers, the most substantial hazards are related to the usage of corrosive highly alkaline ingredients and inhalation of dust and fine particles. Prevention of the latter is already a prerequisite for all hands-on work within the ceramics industry, whereas the safe usage of alkaline materials might require some additional familiarisation as well as concrete changes in the working environment.

Davidovits has been a long-term advocate for user-friendly systems, and selecting alkaline conditions that could be classified as “irritant” as opposed to “corrosive”, is one of his solutions for minimizing risks related to handling corrosive materials (Davidovits, 2020). However, for ceramists who engage directly with the material, even the classification of geopolymers as “irritant” can be limiting in terms of techniques used and potential applications.

In ceramics, the usage of glazes plays a major role in defining how a final object looks and feels, and what physical properties it has. The common temperatures for glazes range between 1000 to 1300 degrees Celsius, much higher than the temperatures needed for polymerisation. Due to this, the usage of traditional glazes on geopolymers makes little sense from the standpoint of developing more sustainable materials. Instead, researching alternative methods for coating geopolymers would be preferable, and more importantly still, developing ways for adjusting the geopolymer material itself so that additional coatings would not even be needed.

One way of affecting the aesthetic qualities as well as mechanical properties of geopolymers is the choice of filler material. Geopolymers allow for a wide range of filler materials and additives to be used, which opens up possibilities that fired clay does not allow. As earth-based materials go through heat treatment at high temperatures, they often change their colour. This is not always desirable. One example of this are the natural kaolin clays, which can have shades of different colours (see Figure 10). The colours mostly disappear, change

or fade when fired. Yet, in geopolymers, raw materials retain most of their original colour.



Figure 10: Raw Finnish kaolin samples in various colours. Photo: Johannes Kaarakainen, 2022.

Looking beyond the physical properties of materials, there are ways in which geopolymers could change making processes in studios. The usage of geopolymers as opposed to ceramics can decrease the timeframe within which items can be finished. The hardening process of a geopolymer object can be complete within 20 hours from casting, when cured at 80°C (Davidovits, 2020, 178). For a ceramic piece, the timeframe is usually several days, as clay must first slowly dry, and only after this can it be fired.

ENERGY CONSUMPTION IN THE CERAMIC STUDIO

As a durable material, ceramics can be perceived as a ‘green’ choice compared to other materials, such as plastic. However, ceramics production requires a considerable amount of energy when the clay is fired and hardened into ceramics at high temperatures. This energy consumption can be considered a void in the perception of ceramics and thus challenges the idea of ceramics as a ‘greener’ choice of material. These kinds of voids in our perception of materials and their production processes need closer evaluation.

When simplified, ceramics are hardened clay. Traditionally clay is transformed into ceramics when it is fired. Commonly in ceramics, when producing objects out of high fired clays, there are two steps when making a ceramic object; first, a bisque firing and then the final glaze firing that can reach over 1300 °C. In bisque firing, the temperature is commonly around 900 °C degrees. Bisque firing hardens clay into ceramics but leaves the clay body still porous, which makes the bisque-fired object easier to handle and glaze. The finishing glaze firing depends on the clay material used, but a typical temperature is around 1240 °C degrees for semi-porcelain clay bodies that are commonly used

within the University workshop. In this particular ceramic studio, where this research has been executed, firings are done almost daily with eleven kilns that vary in size, energy use (gas or electric) and power (see Figure 11).

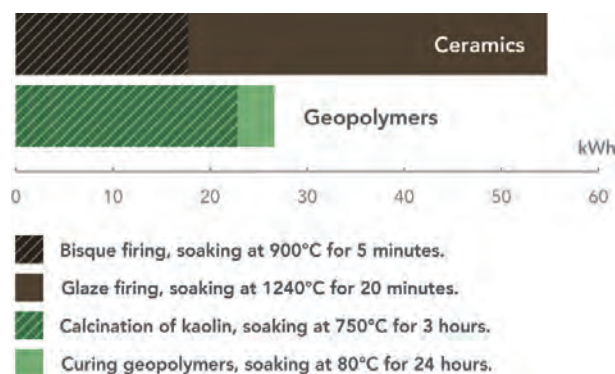


Figure 11: Kiln room in the university ceramics workshop. Photo: Johannes Kaarakainen, 2022.

The process which makes geopolymers solidify is based on an entirely different type of chemical reaction, which is not dependent on heating in high temperatures. Compared to traditional firings for ceramics, the heat treatment of metakaolin-based geopolymers requires a temperature between 60-80 degrees Celsius, usually maintained for around 24 hours.

Table 2 shows that the traditional firings used for making ceramics are considerably higher than those needed for making geopolymers, even when using calcinated (to put it simply, heat-treated at a high temperature) material such as metakaolin. It is noteworthy that in reality, the energy consumption of geopolymers is even lower, as calcined kaolin only makes up approximately 20–30% of the entire item, whereas ceramic items have to be fired as a whole.

Table 2: Comparison of energy consumption between traditional firings and geopolymer processing within a studio context. The reference kiln used for measurement has a connected load of 9 kW and volume of 110 litres.



In the data shown in Table 2, only the energy consumption taking place within the studio context is taken into account. Energy-intensive manufacturing processes of raw ingredients, such as sodium silicate or chamotte, are not considered. However, the total energy consumption values in producing ceramics and geopolymers, from raw materials to a finished product, are not directly comparable, as the utilization of recycled waste materials is one of the goals of geopolymer research. From the perspective of an individual workshop, on the other hand, the energy consumption resulting from internal processes is relevant and can be accurately measured.

The heat needed for polymerisation is relatively low (60–80 degrees Celsius), which opens up the possibility of thinking creatively on how existing environment could be of use. For example, the excess heat escaping from the glass furnace in the university glass workshop could be harnessed for making geopolymers. These kinds of ideas emerge when openly working and discussing the project among students and staff in the university studio environment.

CONCLUSIONS

Geopolymers have untapped potential in the field of ceramics as well creative practices in general. During our research, we have been looking at geopolymers not only as materials, but as something to be incorporated into existing processes and systems in the context of studio ceramics production, with the goal of creating greener practices.

We have found that as a study environment, a ceramics workshop with equipment, machinery and materials commonly used for ceramics production is well-suited for geopolymer research. Many of the materials needed, such as kaolin clays for the binder and various mineral-based options to be used as fillers, are readily available in many ceramic studios. Mixers and mills used for making clay bodies and glazes are also suitable for making geopolymers, too. Kilns can be used for processing raw materials, such as calcinating kaolin to make metakaolin, and for heating geopolymer pieces at precise temperatures for the purpose of hardening and drying the material.

In some respects, geopolymers offer potential benefits over ceramics. Our initial findings indicate that the energy consumption associated with using geopolymers in a studio context is considerably lower than in ceramics production. In addition to the environmentally beneficial aspects of geopolymers over ceramics, there are very practical process-related advantages as well. Works made of geopolymers are free of the restrictions set by the kiln space, which has traditionally limited the sizes and usage of ceramic works. This aspect of geopolymers could enable the production of works on a

scale that would not be possible with ceramics kilns. In addition, the overall hardening time of geopolymers can be significantly shorter over the entire process of drying and firing ceramics.

The possibility of using a wide range of fillers as part of the geopolymer mix opens new ways of recycling waste materials and getting creative with material development. In a ceramics workshop, recycling of porcelain waste is one potential area of interest. Geopolymers allow advantage to be taken of the original colours of the ingredients used since the hardening process does not involve firing. This can be beneficial when choosing the used filler material, for example.

There are also significant downsides to using geopolymers as a replacement for ceramics. The behaviour of geopolymers when working by hand produces a very different haptic sensation compared to clay, as the material tends to collapse easily and is not plastic enough for properly shaping by hand. Instead, geopolymers appear to be better used with methods such as casting or 3D printing. For artists, craftsmen and designers, this sense of distance from the material and difficulty of working in direct contact with it can be a considerable limitation. Another limiting aspect in terms of direct contact with the material is the irritating or corrosive quality of the alkali silicate, which is one of the main ingredients in metakaolin-based geopolymers. The need for additional attention to work safety-related issues can be a concern.

In terms of real-world applications, the highly water-absorbing character of the material can be a restrictive aspect, and research into non-absorbent geopolymers could open up new possibilities. Nonetheless, geopolymers could also find novel applications in ceramic practice precisely for this defining quality.

Based on our research, geopolymers should not be considered a replacement for ceramic materials altogether but instead an additional option for particular uses. Ceramic studios can benefit from the usage of geopolymers in the form of a new inlet for waste materials, such as crushed high-fired ceramics, and as an alternative for uses where the distinct qualities of geopolymer materials offer benefits over ceramics.

DISCUSSION

A ceramist works at an interesting intersection of practices and disciplines. On the one hand, the role is that of a designer or an artist, which encompasses the aspects of craftsmanship, self-expression, and the practical application of theoretical knowledge. On the other hand, material chemistry is an intrinsic part of ceramics. In geopolymer research, this double role of a ceramist can be of use when bridging between the understanding of material research and design for

making real-world applications. This overlap between the knowledge areas of a ceramist can be very helpful in making functional and meaningful communication possible when collaborating with other professionals, such as chemists, geologists and engineers.

The ongoing research with geopolymers and ceramics materials provides an interesting platform for testing different aspects of combining old and new materials. Prototyping, testing, and pushing boldly the boundaries of these new materials through artistic practice will provide valuable information together with the scientific research of the material's mechanical and chemical properties. Geopolymers can offer a less energy-consuming testing phase in studio practice. In the future, geopolymers could open up new possibilities in three-dimensional prototyping and the making of mock-ups, and even, in some parts, provide an alternative to ceramics. The next direction is to test different ways of shaping, moulding, and using additive technologies for building with these new materials. The aim of the next phase of the research is discover out the most appropriate and efficient ways to manufacture different shapes with geopolymers.

Finding a way to practice ceramics design and art without needing to fire the clay has always been an exciting, but idealistic, even utopian, idea. With the use of geopolymers, the vision of unfired ceramic material no longer seems that far-fetched an idea at all.

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MATERIAL MEDITATION: EXPERIENCING CRAFT AS AN EXTENSION TO SOMA DESIGN

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ABSTRACT

This exploratory paper applies a mindful practice to crafting to explore material qualities and build on the relationship between maker and material. We present the method “material meditation”; soma design inspired auto ethnographical reflections on interactions with materials, along with the resulting texts. We discuss the emerging qualities, and implications of such methods, showing how it was used to surface and reflect on material, situational and relational properties.

INTRODUCTION

Everyday life is filled with routines and mundane interactions that are commodified or made ubiquitous, leading to wasteful behavior instead of teaching us, as Ingold says, to “*take materials seriously*” (2007). How can we build relationships with the materials around us? By approaching the experience of craft using first-person design methods in line with SOMA Design, a practice centered around somatic sensibilities (Höök 2018), we explore how one might build an appreciation of materials, and by extension change our relationship with the environment around us. We present the method “material meditation”; simple craft exercises approached as a bodily experience worth paying attention to, along with the results of practicing this approach and possible implications for future practices. This paper contributes to design research by presenting and discussing a method of how to perform “attending” to materials and our environments, encouraged by Ingold (2007), and Aktaş (2022) among others.

THEORETICAL BACKGROUND

Soma Design is an approach to first-person design work with a focus on “...movements, somatics, and aesthetic sensibilities...”, as coined by Höök et al. (2018, p. 2). It is based on *somaesthetics* by Shusterman (1999), a philosophy that advocates sensitizing ourselves to the lived experience of bodily perception, performance, and presentation. One recent example is how Tsaknaki et. al. (2019) used the act of breathing to connect with other bodies in a design project. Other examples include addressing feminist design qualities (Höök et. al. 2021), as a resource when designing for bodily awareness (Ståhl et. al. 2021), and novel musical instruments (Avila et. al. 2020). One aspect of lesser focus in SOMA Design is the experiences inherent in the crafting involved in any practice, which might also result in the estrangement of other bodies and materials.

In the context of craft, research has turned to this same topic of paying attention to experience and relationships built when interacting with materials. One example is Sinikka Pöllänen (2013) finding “evidence of the significance of bodily experience” (p. 223) in craft used as a tool for reflecting on life situations and mitigating pain: “Touching the material and the process of making the artifact had deepened the possibilities to express [their] inner feelings.”. Recently designers have used craft to engage with more-than-human bodies, like Helms (2021) using the notion of *entanglement* to describe the relationship arising between maker and material. Aktaş and Noronha (2021) believe that being entangled with the material is vital “to build sustainable relationships with and through their practices, materials and the environment.”. Further, Aktaş, (2022), suggests that the very act of crafting can help build a relationship with the environment at large, realized by Lilja and Ingold (2022) using “attentive encountering” in direct interactions with limestone.



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Craft] __ __ [Sustainability

One line of research bridging design and craft is work centered around *preciousness*. Earlier research on preciousness includes Verbeek (2005), who lists the aspects that make an object precious in terms of *function*, *symbolism*, and *material qualities*. This was expanded upon by Odom et al (2009) with more concrete examples of *engagement*, *histories*, *augmentation*, and *perceived durability*. Further, Tsaknaki et al (2017) discuss *engagement* and *histories* through imbuing technology with qualities related to jewelry, concluding that preciousness emerges as an object is used as well as something “more than its material components”. This suggests explorations of preciousness in different materials (and designs) to identify how they behave in different situations. More recent work touching on preciousness includes Carpenter and Overholt (2018) building jewelry devices and Wu and Devendorf (2020) disassembling textiles. Due to its intersection with topics such as preservation, disposal, repair, and longevity, the topic craft also relates to reflections on ‘heirloom status’ (Baytaş et. al. 2018), designing for ‘ensoulment’ (Bleviss and Stolterman, 2007), and sustainable design more broadly (e.g. DiSalvo et. al., 2010).

Appearing in different contexts and cultures around the world, our use of the word ‘meditation’ draws inspiration from the everyday definition of ‘meditation’: “a written or spoken discourse expressing considered thoughts on a subject” (Oxford Languages, 2022). The meditations presented below are directly inspired by Ingold’s description of sawing a plank (2007), but focusing on the felt experience instead of the actions.

METHOD

To sensitize ourselves to materials, we performed “material meditation”; sessions of engaging with materials, precluded by somaesthetic activities, and followed by a written reflection. The attention given to the experience and the soma-material relationship is what sets this apart from other crafting practices. Preparations, included slow breathing and body scans as described by Höök (2018) to bring attention to the body and the somatic sensibilities. The meditations were performed by doing foundational craft work like cutting and shaping different materials to produce simple sample pieces (see Figure 1), with a reflection written after each activity. Figures 2 and 3 show hot glass and a field behind the patch of trees mentioned below.



Figure 1: The resulting material pieces



MATERIAL MEDITATIONS

WOOD

It's a late summer afternoon, and I'm walking through a patch of trees. Wet grass and mud make squelching sounds as I step. The air is fresh after a heavy rain, and I can smell the damp vegetation and freshly cut wood. I'm carrying a chainsaw and a length of rope, my father-in-law behind me carrying my one-year-old child. We approach the tree marked to get cut and gesture to discuss where we want it to fall. I place my hand on the trunk and think about its age. It's probably about my age. When I make the first cut, I'm hit by the soft dewy smell of the wood and the oily tang of the chainsaw. My father-in-law gestures. He wants to do the last cut. I walk over to him, and we swap child for chainsaw.

I step away to safety, talking to the little life in my arms while he stares at the activity. I'm telling him that we are clearing space for the other trees to grow bigger. That the material will not go to waste. There is a loud crack as the final piece of the trunk snap and the tree falls. The leaves make a swoosh as they brush their neighbors, then silence them. We pick out some lengths to be saved, then we go off for the next cut. Everything not worth saving is to be firewood. It's a long afternoon at the chopping block. We set aside a mix of oak, beech, ash, cherry, and rowan, the ends are painted with glue and the pieces are set to dry. I check in on the pieces again in winter. My son is now 19 months and running around in overalls, exploring. I cautiously climb the ladder to the loft of the barn. The pile looks exactly like we left it, and it's another couple of months until we can cut the material for use.

GLASS

I can feel the warmth striking my face as I step into the workshop. The air smells of hot steel and old wood. We greet the instructors and get a small tour. As we move about in the room the sharp heat coming off the furnace is a radiating presence. Warm but also promising danger and with a low hum filling the room. I'm completely warm and sweating slightly as we finally get to interact with the material. A steel rod is dipped in melted glass in the furnace, and we get to sit at a workbench, receiving the material for shaping. The glass is at first glowing white with the viscosity of running honey. A constant turning is needed to keep the glass on the end of the rod, and we can shape it by moving the rod or manipulating it with tools. We take turns practicing. It is stressful at the start. The glass keeps running like Greek honey. After a couple of tries, I can make more deliberate movements. Rolling, tilting, and cutting the glass with heavy clippers. The material is so hot I can feel the heat on my face and my hands, giving me a spatial sense of the closeness. First runny,

the glass starts resisting as it cools down and a different technique is required. Different shapes can be made. Then I discover I have worked for too long with the material. The yielding resistance is gone. The realization starts in the low of my back and travels up my spine and out my arm. But I cannot stop the movement I've started. I watch as my hand cuts the glass. The clippers make a crunching sound and the material cracks, small pieces of glass are scattered across the floor. I have overstepped in the dialogue with the material, shoulders hanging in defeat. I'm comforted by an instructor that the material is gathered and reused and by the idea of knowing the material a bit closer than before. Trying other methods, we dripped, pushed, and rolled the glass into different shapes.

METAL

There is something special about the quiet in a space meant for work and activity, anticipation or potency. It's early morning in the metal shop of a local maker space. The tang of metal and oil tastes rather than smells. I get settled and get out boxes of materials to use. Steel, a bit of brass, and a big chunk of aluminum. Some are sharp, others scratched and worn down. I move to the workbench with my prices, all different shapes, and lengths, and weight comforting in my hand. I set out to make a small collection of samples, exploring shapes and sizes. I cut a solid brass cylinder, small chips flying as I pull the saw. Scraping away at the material. I trim and decide to polish a rectangular piece of steel. I sand it in several steps on top of a machinist's stone. Making the surfaces flat. It becomes sharp, biting into my hand if I grip it tight, far different from the gentle piece I started with. Working with metal by hand is slow but rewarding. With each pull of the file and scrape on sandpaper I can feel material being removed. The metal is solid and unyielding, but still shapeable in increments. Finished with a cut, I've worked up a sweat and the metal are hot to the touch. The work has left an impression on both bodies.

PLASTIC

'Acrylic cannot handle stress' I joke to myself after cutting my finger on a corner of the piece I'm cutting. I was getting through to a corner in the material, and in my excitement pushed too hard, breaking off a piece instead of letting the saw file through it. I feel my stress, icy spikes running down my neck and back, reflected in the jagged edge of the plastic and I take a moment to gather myself. With more care, I'm able to sand the edges, producing a smooth edge, but as I wipe the piece clean, I can see scratches and wear, showing use after just a couple of minutes. The piece has the sharp chemical smell of new plastic and feels strangely light for the glossy surface.



DISCUSSION

As suggested by Verbeek (2005), Odom et al. (2009), and Tsaknaki (2017) the memory of crafting becomes embedded in the physical artifact, recalled by observation and touch as notions of *history*, and *engagement*. This plays out, similar to Schön's "conversation with the material" (1968) in three different ways in the meditations above; with memories embedded in the pieces, memories of movement and being moved, and of context and effort. First, we can see above how the pieces bring about the memory of the movement and bodily sensations from the act of crafting. The *intra-action* (Barad 2007) happens sometimes violently, as in the case of acrylic cutting, when the more-than-human bodies involved act on each other. Secondly, the meditations reflect the situation and context of the craft, both physical and social, for example as the memories of family, weather, and time passing are linked to the slow process of drying wood. Similarly, the glass prototype was described with nostalgia from the experience of making it. Lastly, the pieces can be said to embody the effort and energy put into their creation. The glass brings about the memory of the pressing heat of the smelter, and the metal the time and effort of sawing and polishing. Through material meditation, these processes and efforts are made visible.

In the meditations above, we see a wide berth of unearthed interactive qualities both material and relational, like the experience of hardness, density, thermal properties, texture, weight, friction, and aging. Each has a generative quality that could be the center of explorative design work. This result links directly to this paper's aim of sensitizing ourselves to materials and shows potential for wider use. We speculate that material meditations can be used as an exercise to center work on the lived experience and build appreciation for materials, regardless of skill, and see potential in use in designing *heirlooms* and *ensouled* artifacts, by Baytaş et al. (2018) and Nelson & Stolterman, (2003). Further, it would be interesting to see meditations done on less tangible craft practices such as coding or digital art in the spirit of McCullough (1996).

One unintentional aspect arising in the meditations was the experience of the context. Soma design can be perceived as being focusing inward, ignoring, or devaluing the context of interaction in favor of the "inner" experience. We see in the examples above how some interactions become performative, even in single human material interactions as the material itself responds, like the acrylic breaking. This shows that the work of sensitizing to our soma can be used for approaching also other bodies and contexts, bridging SOMA Design and more material-centered practices.

Using the theory by Redström (2017), what is presented here is a *method* aimed at reassessing a designer's base knowledge: their relationship with materials. Along with the referenced work above using craft and engaging in materials, this paper follows the movement or the unspoken *program* of building practices to design a sustainable future. The meditation presented here is a *particular* instance of us attending to the material through our bodies, an example of a new group of emerging methods attending more-than-human bodies.

CONCLUSION

This paper shows that by using 'material meditation' we can intentionally pay attention to human-material interactions in craft and bring the entanglement to the surface, in line with what is suggested by Aktaş and Noronha (2021) among others. The focus on these relationships is a way to build personal connections with materials, and by extension, the world around us. With the pressing crisis of both ecological and social sustainability, these methods could be vital to building practices and habits for a sustainable future.

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PLEASURES, PARTICIPATION OR PRACTICES? UNPACKING THE BLACK BOX OF DESIGNING IN AND WITH ORGANIZATIONS

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ABSTRACT

As a contribution to the field of design management, this paper responds to the uptake of design in organizations by developing and fleshing out a relational approach. The dominating approaches are methodological and cognitive, putting the human designer and her capabilities front and center. In contrast, the relational approach pays close, empirical attention to how designerly contributions come into being as the designer relates to her organization. Thereby, the relational approach enables a more critical understanding of what organizations and designers can achieve together. We unfold our arguments through ethnographic accounts of crucial moments in a development project concerning workplace design. These ethnographic moments were crucial, as they questioned what we could achieve together. We suggest evaluating such achievements through three distinct modes of designing: 1) Designing for human pleasures, 2) Designing for human participation, and 3) Designing for socio-material practices.

INTRODUCTION

In recent years, many designers have left behind the design studio to employ their competencies in other organizational settings. Nevertheless, what can, and should designers do in and with organizations?

The field of design management gives some answers. Here it is suggested that managers and organizations today would do well to adopt a “design attitude,” implying that managers “would [then] approach problems with a sensibility that swept in the broadest array of influences to shape inspiring and energizing designs for products, services, and processes that are both profitable and humanly satisfying” (Boland & Collopy, 2004: 3). Richard J. Boland and Fred Collopy, both professors in management, develop this design attitude by contrasting it with what they term a “decision attitude”: “In a clearly defined and stable situation, when the feasible alternatives are well known, a decision attitude may be the most efficient and effective way to approach problem-solving. But when those conditions do not hold, a design attitude is required. The decision attitude and the analytic tools managers have to support it were developed in a simpler time” (Boland & Collopy, 2004: 4).

But how, more precisely, to unfold this design attitude in practice? How to make sure that designers aid organizations in harnessing the broadest array of influences, resulting in inspiring and energizing designs? Design researchers have responded to these questions in three distinct ways. The first response is methodological. This methodological response develops recipe-like, process-oriented models for how to work as a designer in organizations (see, for instance,



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Tschimmel, 2012). The second response is cognitive, focusing on describing the cognitive styles of designers and arguing that these styles are different from those employed by non-designers (see, for instance, Dorst, 2011, 2015). The problem with these two responses is that by putting the human designer and her methodologies and cognitive abilities front and center, they neglect and make absent the organizational setting in which she operates (see, for instance, Law & Singleton, 2005). This neglect of the organizational setting hampers critical analyses of specific uptakes of design in organizational settings. Such analyses seem more needed than ever, as understandings and deployments of design have become increasingly variegated, resulting in a proliferation of purposes, hopes, and dreams attached to having designers do work in and with organizations (Julier, 2017, see also Kimbell 2011, 2012).

This paper develops a relational approach to enable critical analyses of designerly engagements with organizations. With this relational approach, we “treat everything in the social and natural worlds,” design methodologies and cognitive styles included, “as a continuously generated effect of the webs of relations within which they are located” (Law, 2009: 141). This relational approach enables us to describe and analyze how organizational specificities – specific people and artifacts, politics, and cultures, for instance – all take part in deciding what designers can and cannot do in and with organizations.

We do so through a developmental design project in which one of us, Lindek, took part, which aimed at re-designing how work was to unfold at the town hall of a municipality in the wake of the COVID-19 pandemic. As part of Lindek’s engagement in the project, Lindek developed ‘the relay conversation method’. After completing the project, and as a part of Lindek’s current doctoral work, Lindek approached Petersen to discuss

how the relay conversation method might be developed from a consultancy method to a method for conducting research through design, as this is one of the central ambitions for her doctoral work. “Well, is designing only about enabling conversations?” Petersen asked. This question prompted Lindek to give a detailed account of the project. It became clear that the town hall managers, employees, and artifacts had drawn Lindek into their specific understandings of what a designer like her had to offer their specific organization.

An organization like the town hall can, in a relational approach, be understood as “an exercise in ordering” (Law, 1994: 43), and in the following, we will tease out three such ordering attempts: designing for human pleasure, designing for human participation, and designing for socio-material practices. We aim to show how such ordering attempts enable specific organization-artifact-designer configurations, and point to “artful integrations” (Suchman & Bishop 2000) of the designer’s work rather than a take-it-or-leave-it revolutionizing value-creation. By forwarding these configurations, we wish to enable less heroic and more modest and situated discussions of what design can and should do in organizations.

THE PROJECT: NEW WAYS OF WORKING IN THE WAKE OF COVID-19

The project and its steering group were created by the city council of a Danish municipality. The COVID-19 pandemic gave the town hall managers and employees new experiences with working remotely. The city council wished to explore how these experiences could power the creation of new and better working practices at the town hall. This wish resulted in the project being developed as a part of the partnership agreement with our design school in June 2021. The steering group comprised 15 members (see, Figure 1).

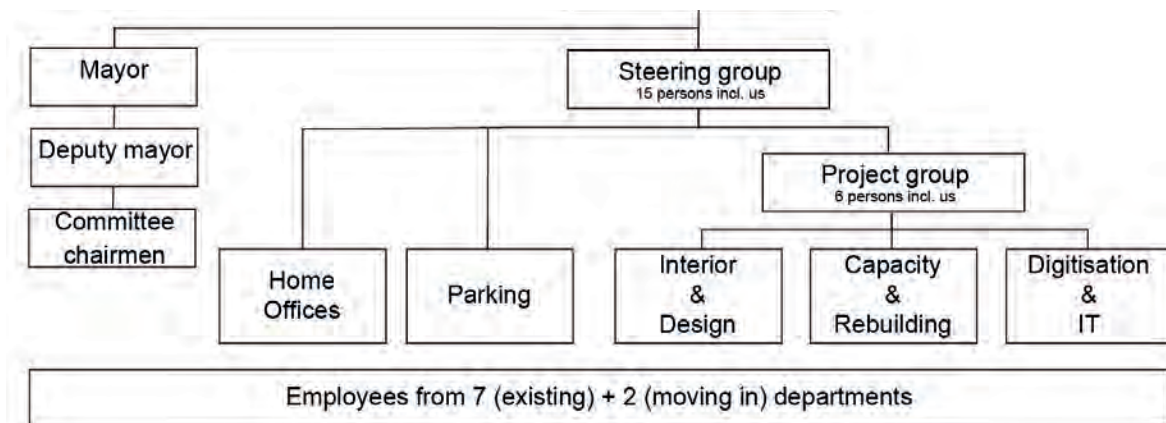


Figure 1: project overview



13 were employed at the town hall, fulfilling roles such as manager, head of department, consultant, and union representative. Two, employed at our school, fulfilled the roles of design consultant and Head of Business Development. This steering group answered to the city council, which was also to approve the recommendations formulated at the end of the project process. Additionally, 5 internal working groups from the town hall were created: Interior & Design, Capacity & Rebuilding, Digitisation & IT, and Parking & Home Offices. All 5 internal working groups referred to the steering group. The last organizational construct created by the project was a project group, in which the design school had one of 6 seats. The project group's task was to ensure that the project did not run astray by outlining three focus areas, which we outline below.

This partnership agreement reads:

“As an effect of the experiences gained with working from home during the COVID-19 pandemic, employees and management at the town hall voiced a desire to continue enabling remote work. To work remotely more extensively would enable several more departments and employees to be moved to the town hall. However, working from home also places new demands on flexible solutions.”

The requirements for these “flexible solutions” are elaborated upon in the project management framework through the three focus areas mentioned. While working from home utilizing digital solutions was adequate for completing concrete tasks, the steering group urged us to find out how working remotely could also support learning and creativity. The second focus was acknowledging the need for office spaces that embraced quiet zones, knowledge sharing, and common areas, such as the canteen and meeting rooms. This need was to be fulfilled through specific furnishings and interior design. The third focus had less to do with the COVID-19 pandemic. It highlighted, instead, that the town hall is a public building, and the steering group wished to ensure it could continue enabling trusting meetings and relations between citizens and authorities.

These 3 focus areas and the steering group's wishes for the project to give the impression that the experiences gained during the COVID-19 pandemic had left the town hall ready for a radical re-design of its physical layout. However, the 3 focus areas came with 6 caveats, also spelled out in the project management framework:

- The building is not to be enlarged or remodeled.
- The solutions must be specific to the departments – only meeting rooms, canteen, and conversation facilities should be cross-departmental.

- The individual departments need permanent locations in the town hall.
- No fixed agreement will be made on how much the employees are allowed to work at the town hall or remotely.
- The project's questions of where and how to work in the future spur many opinions and emotions, and therefore a co-creational process to create ownership was important.
- The project must clarify the advantages of working at the town hall or remotely.

Taken together, the complex organizational set-up of the project, including the three focus areas and the 6 caveats, left us in a bit of a pickle: On the one hand, we were met with expectations of changing everything at the town hall – its physical layout, interior design, and the working practices unfolding there. On the other hand, we were not allowed to change anything – we could not, for instance, enlarge or remodel the town hall building or experiment with the individual departments' permanent locations. One solution was to insist that design – through the designer's specific methodologies and cognitive abilities – can somehow clear up this mess of contrasting expectations. This solution would entail stories of a somewhat heroic designer sorting out organizational messiness all by herself. Another solution embeds the designer in the messy organizational realities and sees her methodologies and cognitive abilities as outcomes of the specific ways she “relates to the object of study and to the socio-material collective in which he or she operates” (Vikkelsø, 2007: 298). It is this second option we unfold here, as it allows us to bring to the fore and discuss what kinds of value-creation design work sensitive to organizational messiness might enact.

The following sections give ethnographic accounts of three pivotal moments in the development project: an introductory meeting, setting up and completing relay conversations, and looking for unused spaces. They were pivotal because they asked Lindek to relate to the socio-material collective of the town hall in three different ways, highlighting three different ways by which she could come to create value in the project.

ENDOWING ARTIFACTS WITH DESIGN

At the first introductory meeting, we met the Head of HR & Administration at his town hall office. We came prepared with a ‘conversation starter’; a piece of A4 paper upon which we had printed the three themes of the project: 1) The physical layout of the town hall, 2) Online meetings, and 3) The home office. The material conversation starter was our attempt at ensuring that the conversation with the Head of HR & Administration would tell us more about what we believed to be the

project's key themes. It was also to function as a place to take notes.

The Head of HR & Administration told us he had worked at the town hall for many years. He knew every nook and cranny of the town hall and the history of every reconstruction made. He also wanted us to know this history and handed us a booklet detailing the transformations that the town hall had undergone over the years. Further, he told us about his specific vision for the transformations the project should bring about. He stressed that “furniture is important,” elaborating that “we have a lot of designer furniture and beech tables, which we would like to keep.” When we walked around the building with him, he pointed out the furniture they wanted to keep.

During the meeting, he also underlined that the white painting on the walls was non-negotiable. Earlier, employees could choose between a range of colors in a color guide when rearranging or swapping offices, but such rearranging and swapping had resulted in too many layers of paint on the town hall's old walls. So, from now on, only white.

MODE I: DESIGNING FOR HUMAN PLEASURE

What to make of this meeting? The conversation underscored that the Head of HR & Administration had specific expectations as to what we, as designers, could and should be able to do in his organization, that is, the town hall. He referred to us as ‘designers’ during the conversation several times. We thought he expected us to compile a new design guide on aesthetics and finish. While within our competencies, our point is that he referred to a specific version of designers and design competencies, seeking to enact a specific mode of designing.

We suggest that the central assumption within this particular mode of designing is “that design is something with which an object can be endowed” (Shove et al. 2007: 129), enabling specific human affective experiences. We were unsurprised that the Head of HR & Administration approached us with these expectations. The idea of designing as endowing products or services with ‘something’ that results in positive human experiences is perhaps the most widespread way for designers and design agencies to market their value (Shove et al. 2007: 125). Within design research, we also find a body of work that highlights and seeks to develop this mode of designing artifacts for the human experience. Desmet & Hekkert (2007), for instance, argue that the “emerging interest in user-centered design has stimulated a shift of focus from the users’ behaviour and cognition to the users’ affective experience of (and involvement in) the human-product interaction” and attempt to “develop a general framework of product experience” (Desmet & Hekkert,

2007: 57). Another critical contributor to this mode of designing is Patrick W. Jordan, who combines his backgrounds in mechanical engineering, ergonomics, and psychology in devising ways in which the designer might come to design “pleasurable products” (Jordan 2000).

While this mode of designing – designing artifacts for human pleasure – could be of value in the project, it was not the mode of designing we had envisioned we would take part in unfolding. During our tour around the town hall, we passed by the canteen. Here the Head of HR & Administration remarked that he would like to see a change from the current “cafeteria-like look,” a place designed for eating lunch, to a place where employees could meet and mingle across departments, that is, designed to take part in fostering cross-departmental collaboration. Through this remark, our interlocutor alluded to a quite different mode of designing, which came closer to our expectations, namely that we would enable the town hall employees to participate in designing the future layout of the canteen and the whole town hall.

PARTICIPATION THROUGH RELAY CONVERSATION

To enable such employee participation in the town hall's future layout, we developed the participatory method of relay conversations. We did so in two steps.

First, we invited representatives from each of the seven existing departments on a walk and talk, where they showed us their working spaces. They told us stories about the situation right now – their experiences of work at the town hall amid the pandemic – intermingling stories of the past and hopes for the future. We distilled 6 analytical categories from these walks and talks: Possibilities, Challenges, Place, Time, Qualities, and Community.

In the second step of involving the employees, we invited 43 employees, representing the seven existing departments and the two departments moving in, to engage with us in relay conversations (see, Figure 2). With a

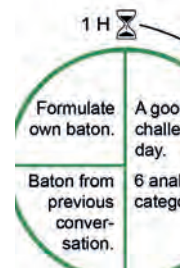


Figure 2: Relay conversation steps and duration, inspired from Sanders and Stappers’ “path of expression” (Sanders & Stappers 2014). Focusing first on the present, then the past, and then the future.

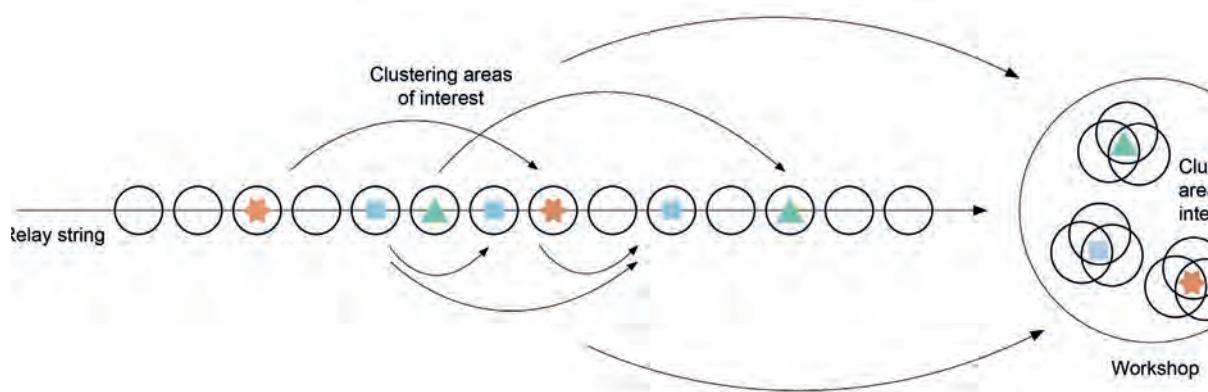


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undertake all the conversations online. We used an online whiteboard upon which we had put photos of artifacts specific to the town hall environments, and floor plans as a facilitation tool.

In formulating questions for the employees involved, we took inspiration from Sanders and Stappers' "path of expression" (Sanders & Stappers 2014). This path of expression utilizes psychological theory about memory and creativity. It asks participants to go "through the successive considering of present experiences, good and bad memories from the past, and hopes and dreams for the future" (Sanders & Stappers 2014: 8, see also Sanders & Stappers 2012). In our case, we elicited the employees' present experiences working through a pandemic. We talked with the employees about their good and bad memories. And we asked them to detail their hopes and dreams for the future layout of the town hall. We asked the employees to tell stories from their everyday work life at the town hall, prompting them to tell us about a good and challenging day at work. We extracted the essential elements from these conversations and asked them to place them within the 6 categories developed through the walk and talks. We introduced the baton from the previous conversation and ended by having them formulate a baton. We could all see, read, rethink, and adjust the outcome by live sharing our notes on the online whiteboard.

We used an online calendar to organize the many conversations where the employees could choose a fitting timeslot. As a result, the employees were involved in random order, and the resulting relay strings were cut across all nine departments (see, figure 3).



However, between each conversation, we, as a minimum, had a small time slot to jot down insights that could be important to bring forward in the following conversations.

To give an example of the contents of the relay conversations: one employee stated that our bodies are not made for sitting still in front of a screen for 7,5 hours a day. We told this employee of a colleague with whom we had had a conversation earlier, who went to get one cup of coffee at a time instead of fetching a whole pot. At a first glance, this seems like a waste of time. However, when explaining this behaviour in a later conversation, the employee pointed to the integrated exercise of body and brain, the opportunity of chance meetings with colleagues, and – of course – fresher coffee. This need for integrating bodily movement and exercise into the workday was expressed throughout the relay conversations, and later materialized as kitchenettes on each of the town hall floors.

Building on such and other analytical results of the relay conversations, we formulated 5 principles regarding the future layout of the town hall:

- Citizen- and business-oriented activities are to take place under joint official hosting.
- Outdoor spaces and exercise opportunities will be an integrated part of the layout of the town hall.
- Meeting and conversation facilities are shared by all the employees as is already the case with kitchen and canteen facilities.
- Executive offices are to be moved to smaller offices with limited meeting facilities.
- More spaces are allocated for developing ideas and for immersive work.

These 5 principles were presented to the city council, who, we were told, regarded the 5 principles as having "a nice ring to them." The 5 principles were then approved and adopted by the city council.

MODE II: DESIGNING FOR HUMAN PARTICIPATION

In this part of the project, we engaged in and were drawn into a different mode of designing. While the first mode of designing considers how humans might get pleasure from relating to artifacts enriched with design, this second mode asks the designer to enable human participation in the design process. Design research on Participatory Design (PD) inspires this second mode of designing. Halskov & Hansen 2015, which conducts a review of all full papers from the Participatory Design Conferences (PDC) 2002–2012, offer 5 fundamental aspects of PD:

- Politics: People affected by a decision should be able to influence it.
- People: People play critical roles in design by being experts in their own lives.
- Context: The use situation is the fundamental starting point for the design process.
- Methods: Methods are means for users to gain influence in design processes.
- Product: Participation aims to design alternatives, improving quality of life.

All 5 fundamental aspects of PD were present in this part of the project. However, participation cannot be ensured by checking points on a list. We agree with Andersen et al. (2015), which argues that “although designers constantly consider and address participation, there is a surprising lack of detailed accounts and analyses of what constitutes participation” (Andersen et al., 2015: 252). Instead, Andersen et al. (2015), urges us always to understand participation as “a specific achievement,” which “must be accounted for as such” (Andersen et al., 2015: 251). So, what specific kind of participation did we achieve here?

conversations. Individual conversations enabled the employees to tell their stories of their daily work, bypassing existing organizational hierarchy and layers of decision-making. Letting time pass between the conversations enabled the employees involved to reflect upon their participation in the project while allowing us to mediate and inspire across relay strings (see, Figure 4). The delay between the relay conversations created an opportunity for talks in the corridors, which we encouraged by telling the employees: “If you talk to your colleagues and come up with new ideas, come to think about new perspectives, or something else, please reach out to us!”

This encouragement proved to work well. Before entering the relay conversations, several employees referred to informal conversations with colleagues. Further, employees self-organized small-scale trial-and-error experiments in their offices and meeting facilities. One example is the decision to establish kitchenettes on each floor. Another example: Employees tested how it would affect working procedures if the Head of the Secretariat moved from an individual to an open office. As designers, we know that participation can be challenging to achieve – participation is best understood as a “matter of concern” within rather than a “matter of fact” of PD (Andersen et al. 2015, see also Latour 2004).

Moreover, the specific form of participation that unfolded here did not align with the steering group’s idea of what kind of participation the project should yield. Before the relay conversations and the employees’ trial-and-error experiments, the steering group had agreed to share the baton statements of the employees involved with all employees at the town hall. This was to let them in on the contents of the relay



Various kinds of workshops have been forwarded as the preferred method for designers keen to achieving participation (see, for instance, Greenbaum & Kyng 1991, and Robertson & Simonsen 2012). In this project, however, we departed from the collaborative enactment of participation that the workshop format enables by conducting individual relay conversations with the employees and letting some time pass between the

conversations. Subsequently, this decision was reversed by the steering group. The employees’ participation had become somewhat unruly, the steering group found. The relay conversations were not only about present, past, and future work at the town hall. They also prompted transformations in daily work practices. Transformations that the steering group had not envisioned. And perhaps these transformations did not

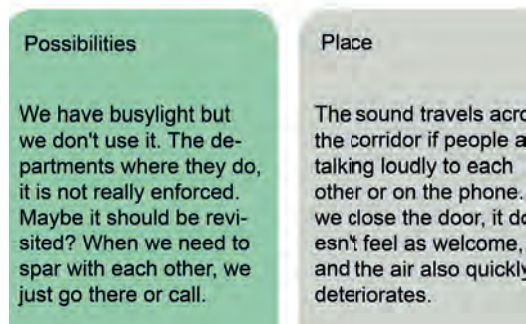


align with the dreams of the city council, to whom the steering group was responsible.

We learn here that designing for participation can spill over into the third mode of designing, namely designing for socio-material practices. It is to this third and last mode we turn now.

OFF-LIMITS: 6 CHAIRPERSONS' AND 33 ONE-PERSON OFFICES

Apart from the 5 principles for the future layout of the town hall introduced above, we were also asked to develop concluding recommendations. We approached this task by meeting up with the steering group. During the meeting, we pinpointed the challenges expressed in the relay conversations. Based on this meeting and two subsequent workshops, we transformed the 5 principles into a new layout for the town hall. The critical challenge, as already highlighted in the 5 principles, was a need for more space for unfolding a more dynamic workday while at the same time avoiding disturbing one another. One employee having online meetings in the office space, for instance, was disturbing to fellow employees, and thinking about not disturbing fellow employees was felt by other employees to restrict creativity in solving their tasks. Another concern was how to handle confidential citizen and business cases. This concern clashed with the wish to be a welcoming and open institution and would, to be solved, require spaces dedicated to confidential conversations (see, Figure 5).



Walking around the town hall and mapping the layout and the use of it to find more space, we came across 6 offices on the second floor. These offices were used on Wednesdays only. We wondered why we had not been shown these 6 offices earlier on. We asked the relevant employees. While some did not know, others told us the offices belonged to the 6 committee chairpersons. They,

the committee chairpersons, only used their offices on Wednesdays, where they held meetings. “Great,” we thought, “these offices can be utilized as meeting facilities on Mondays, Tuesdays, Thursdays, and Fridays!” We presented this idea of dual use of the committee chairpersons’ offices to the steering group. Their faces expressed avoidance. They told us that they would get back to us later on that matter. A few days passed, and we were told we could not touch those offices as it was “a delicate political matter.”

Another example: During our work, we learned that the town hall comprised 33 one-person offices occupied by managing employees and equipped with meeting facilities. During the relay conversations managing employees and employees had all expressed a wish to keep this convenient resource, where they did not have to book nor share the meeting facilities with the other departments. Since this solution was unsustainable due to the many new colleagues at the town hall, we recommended separating offices from meeting facilities. This recommendation was, again, regarded as a delicate political matter. It was seen as “a drastic change” by the managing employees having to give up the sole occupancy of their offices. However, as shown above, it was accepted as one of the 5 principles.

MODE III: DESIGNING FOR SOCIO-MATERIAL PRACTICES

In this third mode of designing – designing for socio-material practices – artifacts such as an office equipped with meeting facilities are not to be endowed with design as in Mode I. Neither are the offices solely utilized to elicit human participation as in Mode II. What, then? We suggest, with analytical help from anthropologist and design researcher Arturo Escobar, that we were here drawn into what Escobar terms “ontological design” (Escobar, 2018). Escobar elaborates: “Design is ontological in that all design-led objects, tools, and even services bring about particular ways of being, knowing, and doing” (Escobar, 2018: 9).

In this part of the project, we suggested tinkering with the designed artifacts of the 6 chairpersons’ and the 33 one-person offices. Not only as something we as designers could endow with certain qualities or as written or talked about in our recommendations. But as designed artifacts that, in Escobar’s view, participate in enabling particular ways of being, knowing, and doing, that is, particular socio-material practices. Through our tinkering, the offices went from being understood as a passive container for human work to becoming “vibrant matter” (Bennett 2010). The offices’ vibrant participation in, for instance, keeping organizational hierarchies in check or, perhaps, bringing about more intense collaboration between managers and employees was a deciding force in determining what we, as

designers, could and could not help the steering group to achieve.

DISCUSSION

Our research question read: What can, and should designers do in and with organizations? Perhaps counter-intuitively, we approached this question by bracketing strong statements concerning our commitment to unfolding a specific design methodology or applying specific cognitive abilities belonging to only us, the designers. This bracketing allowed us, instead, to develop and tell stories about three specific modes of designing: designing for human pleasure, designing for human participation, and designing for socio-material practices. What to make of these three modes of designing? What do they tell us about what designers can and should do in and with organizations? To answer these questions, we will unbracket the human designer and discuss what she can and should do when entering organizations, working in and with organizations, and leaving organizations behind.

WHEN ENTERING ORGANIZATIONS: EMBRACING ORGANIZATIONAL MULTIPLICITY

Our notion of modes of designing is “an attempt to find a way of imputing quite general patterning strategies to the materially heterogeneous networks of the social” (Law 1994: 95), specifically the materially heterogeneous networks of designing in and with organizations. As we saw in the stories above, when the designer leaves the design studio behind and starts working in and with organizations, she is confronted with, drawn into, and asked to handle patterning strategies that may differ from those performed in and by the design studio. Think about the Head of HR & Administration. He enrolled pieces of furniture, which to him were endowed with design, in his attempt at ordering the project and its potential value creation along the lines of artifacts eliciting human pleasure. A second ordering attempt was the project management framework’s call for creating ownership amongst the employees and managers for the recommendations produced in the project. An ordering attempt that we responded to by employing the participatory method of relay conversations.

We admit that then and there – when we first entered the project with the town hall – these attempts at ordering us as designers and our potential value creation created frustrations. We became frustrated because these ordering attempts did not fully align with what we expected that we would be doing and the value we would be creating. This frustration was expressed in our impression that the steering group expected us to change everything without touching anything. Our frustration can be understood as an outcome of us expecting

organizational singularity while being confronted with organizational multiplicity. We suggest understanding and working with organizational multiplicity as the norm rather than the exception when entering into collaborations with organizations. This can be done by listening carefully to the differing expectations formulated by the organization and trying to connect these expectations to relevant modes of designing. Or, as we did in this project, to attempt to background what we found less relevant modes of designing, in our case designing for human pleasures.

WHEN WORKING IN AND WITH ORGANIZATIONS: EMBRACING SPILLOVERS BETWEEN MODES OF DESIGNING

All three modes of designing describe specific configurations of relations between the organization, artifact, and designer. Designing for human pleasure highlights an organization's aesthetics – in our case, we were asked not to let the project destroy the town hall’s existing aesthetic qualities. Designing for human participation speaks of a lack of employee engagement in organizational change processes. It expects the designer to enable such participation through various artifact-driven methods, the relay conversations employed here being the case in point. Designing for socio-material practices offers to transform how work is done, and in doing so, it enrolls artifacts and prior conversations as change agents. We saw this in the employees’ self-organized trial and error experiments, through which they experimented with their future working practices on-site. We also saw how these employee experiments were later shut down by the steering group as the steering group felt that these experiments were premature.

These examples should make it clear that we do not want to suggest a simple hierarchy between the three modes of designing. Designing for socio-material practices, for instance, is by no means always and everywhere a more value-creating response to organizational challenges than, say, designing for human pleasure. What we do want to suggest, however, is that the three modes of designing can spillover into one another in quite unpredictable ways. Designing for participation can spillover into designing for socio-material practices which again can ‘spillback’ into designing for human participation and designing for human pleasure. Such spillovers and spillbacks are not solely in the hands of the designer. To attempt ultimate control would be in vain. What can be done by the designer, however, is to register spillovers and spillbacks, and to embrace and analyze them as resources for navigating the organizational multiplicity in which she operates.



WHEN LEAVING (AND RE-ENTERING)
 ORGANIZATIONS: EMBRACING MORE THAN
 CONVERSATIONS

We will end by returning to Petersen's question to Lindek: "Well, is designing only about enabling conversations?" The answer, now, is no. Designing in and with organizations is, instead, about being drawn into, experimenting with, and handling different modes of designing. Here we have suggested three modes of designing, which all urge the designer to embrace that her value creation lies not only in engendering conversations but also in tinkering with organizational ways of being, knowing, and doing.

This also raises questions concerning the generalizability of the three modes of designing developed here. Are they only unfolding in this specific development project, at this specific town hall, or could they be useful in other development projects, working with other kinds of organizations and at other sites? We have developed the three modes of designing as a response to situated field encounters, but these encounters also resonated with bodies of design research literature. This means that it is likely that similar modes of designing unfurl in other projects. And that is precisely the point of this paper: design has overspilled into other fields, the relevant field here being management, that have formed specific ideas about what design is and how it works. These ideas might be misunderstood. We suggest, however, taking the situated ideas very seriously, as they take part in determining what organizations, artifacts, and designers might achieve together. The designer, keen to work in and with organizations, thus, would do well to understand better what is already on the canvas. The three modes of designing developed here are meant as an analytical aid in working up this understanding.

CONCLUSION

In this paper, we have proposed a particular take on collaborations between organizations, artifacts, and designers. Existing approaches place the human designer front and center, arguing that the human designer brings specific design methodologies and cognitive styles into organizations. Here, these methodologies and cognitive styles can be employed to solve the thorny organizational problems of our time, the field of design management proposes. These approaches fail to care for the specificities and vibrancy of the organizational setting to which the designer relates. As an effect, they bridle our ability to systematically and critically discuss what designers can hope to achieve in and with organizations. Instead, we suggest a relational approach, which understands everything – the designer and her methodologies and cognitive styles included – as relational effects.

This relational approach prompted us to give ethnographic accounts of critical moments in a developmental design project. These were key moments, as they made present different configurations of the relations between the organization, designer, and artifacts and thus gave different answers on what designers can and should hope to achieve when collaborating with organizations. We transformed the three critical moments into three modes of designing: 1) Designing for human pleasures, 2) Designing for participation, and 3) Designing for socio-material practices. We hope these three modes of designing will be taken up and developed further by designers as analytical tools for navigating and ensuring the broadest possible value-creation in organizational design collaborations.

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GENEROUS CROWDEDNESS: CULTIVATING SPACE(S) FOR CARE AT ALTERNATIVE DESIGN MUSEUMS

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ABSTRACT

The design discipline is implicated in the trajectories that have led us to an unsustainable present. There is an urgency to re-direct the design discipline, so that it can become able to not only stay with past and present trouble, but also to develop other futures. To see how design museums might support change rather than preservation, we look to the example of protest archives. Based on an analysis of relational space, we suggest that the relative crowdedness of protest archives emerges out of matters of care, and allows for the development of alternative ways of being and creating. We thus identify a set of qualities that might be used to inform development of alternative spaces for care in design that aim to become able to respond to urgencies and to open up more just futures.

1. INTRODUCTION

The pathways that the modern society and its design discipline have followed so far, have led into an unsustainable present. There is an urgency to re-direct the design discipline, so that it can become able to not only stay with past and present trouble, but also to imagine and develop other futures (1) (2). However,

(1) Tony Fry & Clive Dilnot, 2003.

(2) Donna Haraway & Martha Kenny, 2015.



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design is instead often preserved in various ways, most notably and literally in design museums. In this paper we explore how design museums might function to support change rather than preservation.

In contrast to established design museums, protest archives support social justice movements. By making accessible alternative histories, they enable alternative ways of dealing with the present and of envisioning alternative, more just futures. The activists who are running them often do not want their materials and efforts to be included into bigger, institutional archives; they rather want to create and sustain their own spaces. Run by and for marginalised communities, these often crowded spaces revolve around plenty of material from social justice movements (like in case of Interference Archive, New York; das feministische Archiv FFBIZ, Berlin; or Bishopsgate Institute Special Collections and Archives, London) and/or rich, lived experiences that otherwise are rendered invisible by mainstream history and society (like in the case of the Lesbian Herstory Archives, New York), always in regard to changing the status quo and fostering a multitude of *other* futures (3). These archives also serve as a home for community to gather. Even though densely populated with all kinds of material and hosting many visitors, they also manage to make space for exhibiting material from the archives to support discussions and workshops. Protest archives and similar spaces support efforts of challenging and changing society.

(3) Cait McKinney, 2020.

In the design discipline, spaces for change are lacking. Instead of opening up ways for leaving the trajectories that brought us to the present, these very trajectories and the current state are often preserved by established design museums (4). These institutions take up space in what is generally defined as the design discipline. They are either entirely dedicated to design (like the Vitra Design Museum, Weil am Rhein), or include a design collection in a bigger setting framed as arts and crafts, applied arts, or similar (like the Victoria & Albert Museum, London). Some of them are older than others, and they are housed in different building types; however, they often share understandings of how and which design results to present. Historically, design museums have been influenced by the idea of the nation state, by classism, patriarchy and capitalism. Their interpretation of time often takes the shape of a straight timeline (representing progress) that leads from one universal past to one universal future. They aim to raise awareness about design and its importance; and offer designers insights into the history of their profession, inspire, but also foster “good quality” (5).

(4) Anja Neidhardt, Heather Wiltse, and Anna Croon, 2022.

(5) Sabrina Rahman, 2013.

One difference that comes into view when comparing established design museums and protest archives is related to space. Established design museums seem to have much blank space in their exhibition rooms; however, they seem to not make space for whatever





Figure 1: Permanent design exhibition at Museum of Applied Arts Cologne. Photo: Anja Neidhardt-Mokoena, 18 June 2022.



Figure 2: Permanent design exhibition at Grassi Museum of Applied Arts. Photo: Anja Neidhardt-Mokoena, 4 Sep 2022.



Figure 3: Lesbian Herstory Archives: “A few photos from this morning’s Little Rainbows: Storytime at the Lesbian Herstory Archives, a series we started early 2018. All parents and little ones welcome. Stories emphasize queerness, difference, and social justice. Join us for the next Little Rainbows on Saturday, February 16 at 10.30am. Organized by a committee including @catalina_schliebener @baxtellen @lucianapinchiero @allwevegofilm and Mr. Elvis. Photos by @catalina_schliebener and @allwevegofilm” Posted on their Instagram channel, 12 Jan 2019. Available at: <https://www.instagram.com/p/BsjHZayh4AS/> [Accessed 6 Dec 2022].



Figure 4: Bishopsgate Institute: “Open Day: Archiving LGBTQ+ Futures – This Saturday 26 March. Out and About! may have drawn to a close, but you can experience our LGBTQ+ collections first hand our archive open day at the Institute. Come experience displays, archive tours and the opportunity to donate to the collection and the future of LGBTQ+ history.” On their Instagram channel, posted 23 Mar 2022. Available at: <https://www.instagram.com/p/CbchFknu6hT/> [Accessed 6 Dec 2022]

deviates from prevailing narratives and norms (Fig. 1 & 2). Protest archives, though, seem to be crowded and sometimes even messy, while simultaneously open to accommodating even more (Fig. 3 & 4). This paper aims to explore how this phenomenon is related to the trajectories that each of them follows. What could be learnt for the design discipline, especially when it comes to dealing with urgencies and supporting change towards more just futures?

2. APPROACH AND METHODS

In order to explore these questions, we think about space not as a container or as absolute, but rather as relational (6). Furthermore, we understand things as gatherings; they are not just physical objects, but come with immaterial and invisible contexts (7). This allows us to take into account not just the objects we see exhibited, but also the contexts in which they were created, used and collected. However, following feminist thinking, we argue that some matters need more care than others (8). We are using our particular perspective as feminist researchers in the design discipline to identify blind spots, things that usually go unnoticed, that are absent or pushed aside, cut off or rendered invisible. This approach can make it possible to explore what things to care about.

This exploratory paper is part of an ongoing design research project and informed by museum visits and workshops that the first author conducted. It is not a museology study, or an architectural analysis of space, a curatorial approach or a focus on policies. It emerges from within design research.

We also approach the very design of this paper in spatial and intersectional feminist ways: In the references we foreground people who are not white men (9), stating their full names to make their identities more visible, and letting them take up space in a side column, on the same level and in dialogue with the main text. The design of the paper aims to allow for different readings: One is the text itself, another one is the references, and a third one is the images and table. With all this we aim to contribute to changing ways of knowledge building in design research.

3. RELATIONAL SPACE IN DESIGN MUSEUMS

Earlier we observed that established design museums seem to have much space in their exhibition rooms, while protest archives seem to be crowded. One reason for this might be that established design museums are focusing on the preservation of design, which in itself is based on a definition of good quality and therefore on selection criteria and exclusions, leading to space left blank. The crowdedness of protest archives, though, seems to emerge from *other* characteristics that allow

(6) Doreen Barbara Massey, 1994.

(7) Bruno Latour, 2005.

(8) María Puig de la Bellacasa, 2017.

(9) Sara Ahmed, 2017.



for new connections and the development of alternative ways of being and creating.

3.1. PRESERVING OBJECTS

As a way to understand what these characteristics might be, we propose to think about relational space in design museums with the help of the concepts *matters of fact*, *matters of concern*, and *matters of care*. Established design museums seem to preserve and exhibit rather *objects* than *things*. Objects are cut, and therefore isolated, from their attachments, in contrast to things which are gatherings of objects and their attachments (10). Especially in permanent exhibitions, design museums tend to present objects on pedestals, with a distance between and in isolation from each other, even though exhibited together with either objects of similar aesthetics, time periods or locations. The focus is mainly on their formal, visual features, accompanied by short texts.

The Panton chair is an example of a design that can be found in many design museums. For a design to be collected, it needs to fulfill criteria such as new material, outstanding form, innovative function and great color choices. However, also the established name of a designer, like Verner Panton, makes a design like the Panton Chair, relevant for an institution like the Grassi Museum of Applied Arts to collect (11).

However, we know that the figure of the predominantly white male star designer shadows team work (12).

Verner's wife Marianne Panton and his colleague Rina Troxler managed his career and even long after his death, keep his name and his work alive (13). If an established name is a reason for a museum to collect a design – is then building a big name not part of the design process? And, therefore Marianne Panton and Rina Troxler designers too – even though they are not trained designers and claim to never have influenced any of Verner's designs? Different definitions and criteria would shift focus and also shine light on the team.

We can see that the facts that are accompanying the exhibited objects already create a certain context, but so do the ways in which the designs are arranged in space. The Panton chair is often shown alongside other designs to represent a period. Each contextualisation is a choice to showcase a specific development and through the setting it becomes *the* one and only story, even though so many others could be told. (Fig. 5–17)

Exhibiting “isolated” objects only works if there is an agreement on definitions and criteria, and if visitors know the established narratives and leave their own attachments at the door too. Our identities and lived experiences can enable us to see things from perspectives that deviate from a given norm. The pressure to take a distance from ourselves in order to see “objectively” can lead to feeling alienated, and can be

(10) Bruno Latour, 2005.

(11) Sabine Epple, 2022.

(12) Cheryl Buckley, 1986.

(13) Nora Schmidt and Christina Barthelmie, 2008.



Figure 5.

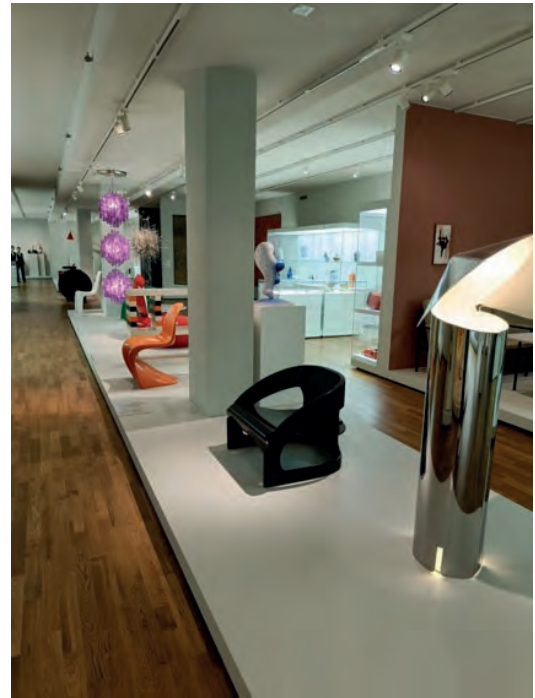


Figure 6.

106
Möbeldesign
der 1960er Jahre

In den 1960er Jahren war der Siegeszug des Kunststoffs nicht mehr aufzuhalten. Eine Ikone des Möbeldesigns ist der 1967 auf den Markt gekommene Stuhl des Dänen Verner Panton. Der Designer hatte schon in den 1950er Jahren die Idee, einen freischwingenden Stuhl aus einem Stück zu formen, aber erst die rasante Entwicklung der Kunststoffe ermöglichte die Realisierung. Unser Exemplar ist 1970 entstanden und besteht aus durchgefärbten Kunststoffgranulaten. Modelle aus diesem Material sind an den Unterseiten mit Rippen verstärkt und wurden zwischen 1970 und 1979 produziert. Auch in der DDR entstanden zahlreiche Möbel aus Kunststoff. Da die Entwicklung und Herstellung der Werkzeuge sehr teuer war, erwarb man Entwürfe und Technik auch auf dem westlichen Markt. Ein Beispiel dafür ist das sogenannte Sitz-Ei.

Regal „Brick“
Shelf "Brick"
 Entwurf: Jonathan de Pas, Donato d'Urbino, Paolo Lomazzi, Italien, 1970
 Ausführung: Longato, Padua (Italien)
 Kunststoff
 Erworben im Berliner Kunsthandel mit Unterstützung der Sächsischen Landesstelle für Museen mit Mitteln des Freistaates Sachsen, Chemnitz, 2007

Stuhl „Panton Chair“
"Panton Chair"
 Entwurf: Verner Panton, Basel, 1958–1967
 Ausführung: Herman Miller Furniture Company/Fehlbaum Production, Weil am Rhein, 1970–1979
 „Luran 5“ (Thermoplastik, durchgefärbtes Plastikgranulat), gegossen
 Erworben aus Privatbesitz, 2008

Figure 7.

Figures 5, 6, 7: The Panton Chair and accompanying text in the permanent design exhibition at Grassi Museum of Applied Arts. Photos: Anja Neidhardt-Mokoena, 4 Sep 2022. The description text says: “In the 1960s the triumphal march of plastic could no longer be stopped” (our translation. Original: “In den 1960er Jahren war der Siegeszug des Kunststoffs nicht mehr aufzuhalten”). As if this change had been unfolding in front of us, outside of our control, as if not made and driven by human beings.





Figure 8.

The Big Bang – Pop Art, Anti Design and Radical Design

In the 1950s, an art movement developed independently in the United Kingdom and in the United States: pop art. It queried the value system of the (consumer) societies of the time and turned it upside down by using seemingly trivial motives. A significant technique of pop artists was the 'blow-up'. This means that an everyday small object – for example a soup can – was presented in giant size as a silk-screen print or hand-painted on canvas.

Starting in Italy, the anti-design and radical design movements formed in the late 1960s. Both styles, between which the transitions were fluid, turned against pure purpose orientation and tried to transfer the methods of pop art to the design context. Good examples are the 'Capitello' lounge chair by the Italian design and architecture practice Studio 65 and the 'Cactus' coat stand, which was designed by Guido Drocco (born 1942) and Franco Mello (born 1945). The 'Capitello' bears reference to a marble Ionian column capital, but is made of flexible polyurethane foam; the 'Cactus' uses the blow-up effect with regard to prickly decorative plants – and also proves to be of limited use as a coat stand.

Figure 9.



Figure 10.

Figures 8, 9, 10, 11: The Museum of Applied Arts Cologne does not only show the Panton Chair in its permanent design exhibition as well. It too, puts the chair on a white pedestal and in combination with a small text that offers facts like name of the designer and when he lived, production company and its location, materials and production method. Photos: Anja Neidhardt-Mokoena, 18 June 2022.

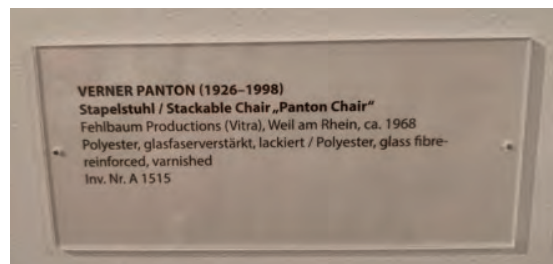


Figure 11.



Figure 12.



Figure 13.



Figure 14.



Figure 15.

Figures 12, 13, 14, 15: Pantone chair in the permanent design exhibition at Grassi Museum of Applied Arts. Photos: Anja Neidhardt-Mokoena, 4 Sep 2022. Here visitors can walk around the Pantone chair and see it from different angles. However, they can't see everything: For many years the design and production team was unsuccessful to keep the plastic from becoming porous when the chair was placed outdoors, causing injuries (Sabine Epple, 2022). Not to speak of the environmental impact of promoting plastic as a new material to achieve and celebrate unprecedented, extraordinary aesthetics and shapes.



Figure 16.

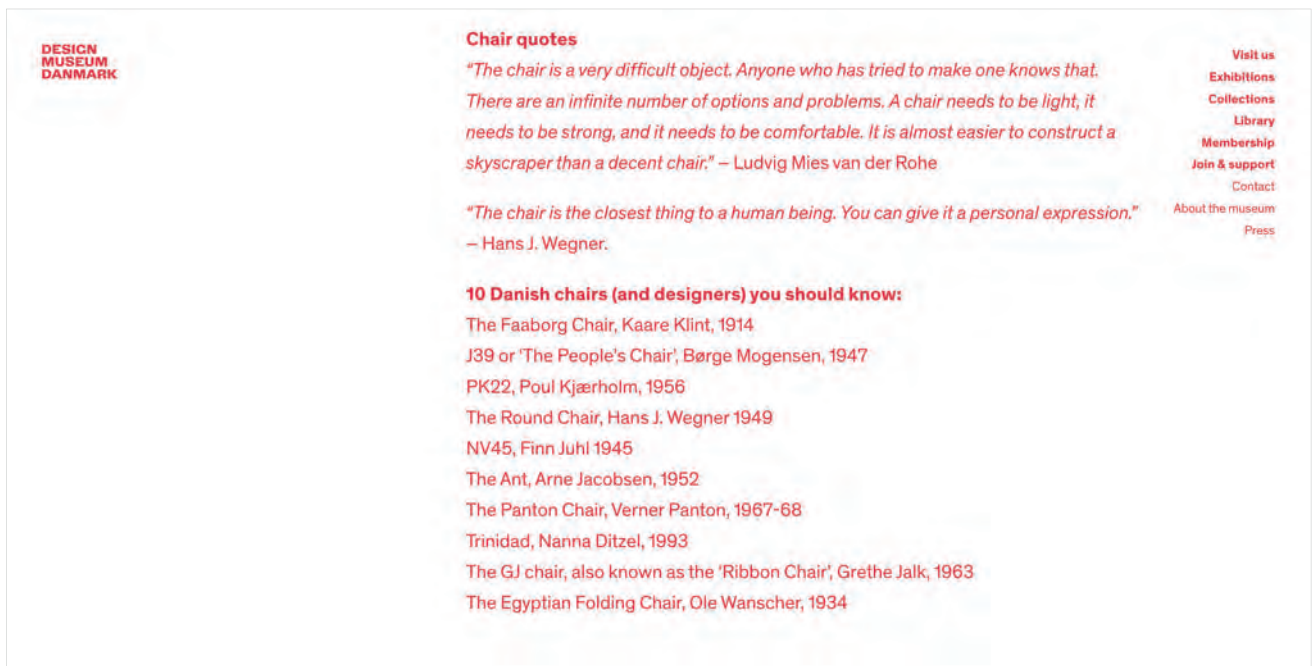


Figure 17.

Figure 16 & 17: Until recently, the Design Museum Denmark showed a list of “10 Danish chairs (and designers) you should know” on their website, including the Panton chair, suggesting that this knowledge is a requirement. Available until recently at: <https://designmuseum.dk/en/exhibition/the-danish-chair-an-international-affair/> [Accessed 3 Nov 2022].

seen as part of a rigid space that produces, or attracts, always the same visitors, and that revolves around the preservation of a very specific design discipline.

It becomes clear that established design museums exhibit and preserve rather *objects* than *things*: objects that are cut from most of their attachments and only presented in combination with a few selected facts. This is based on, and also creates, exclusions and blind spots leading to blank spaces.

3.2. CHANGING GATHERINGS

A supposedly easy step forward for established design museums would be to not cut attachments, to move from objects to things, from matters of fact to matters of concern. Most museums have for example by now changed the description of designs by Charles and Ray Eames, finally including Ray as the designer she was. However, the definitions and criteria for supposedly good designs and the ways they are presented often remain the same.

Some museums try to welcome more diversity by re-formulating or re-interpreting criteria and foci for their practices, which allows them to for example now include feminist zines, activist posters or pussy hats. These efforts seem to only work to a certain extent, since many of the new designs are still cut from attachments that made them relevant in the first place.

Even if there was enough space to include all context, all matters of concern, this would contradict the very principle of the established design museums, which is based on creating blank spaces to distance objects from each other and from visitors. Apart from this, including everything is not just impossible, it is not helpful either. “It matters what matters we use to think other matters with”, as Donna Haraway (14) says. While the concept matters of concern can help to understand how things are assembled in order to draw a bigger picture of reality, its aim is not a de-construction of the interests these things might represent (15). The concept matters of care, though, “aims to add something to matters of fact/concern with the intention of not only respecting them but of getting further involved in their becoming” (16). We believe that thinking with matters of care can inspire us to approach museums and the role they play in and for the design discipline in *other* ways. Since design museums are involved in world-making, we have to ask: “What worlds are being maintained and at the expenses of which others?” (17) There is a need for “becom[ing] able to cut in a certain way because of our own attachments – because we care about certain things more than others” in order to “foster caring relations” (18). It matters which attachments we care about and for, and why we do so. Apart from this, we can only cut differently when we are not alienated from ourselves, so that our own lived experiences, perspectives and values can guide us.

(14) Donna Haraway, 2016, p. 12.

(15) María Puig de la Bellacasa, 2017, p. 39.

(16) Ibid, p. 66.

(17) Ibid., p. 44.

(18) Ibid, p. 62, our italics.





Figure 18.

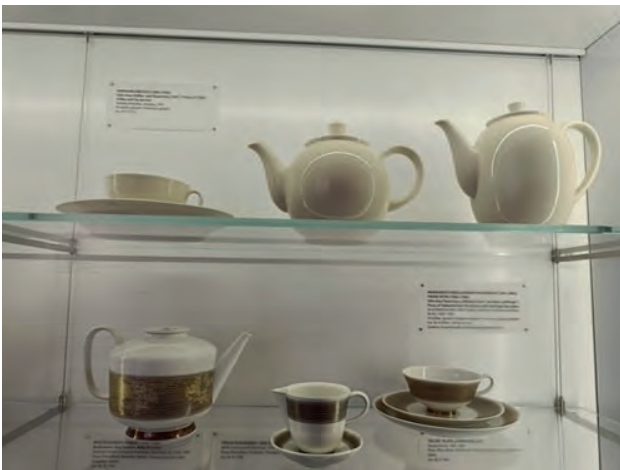


Figure 19.

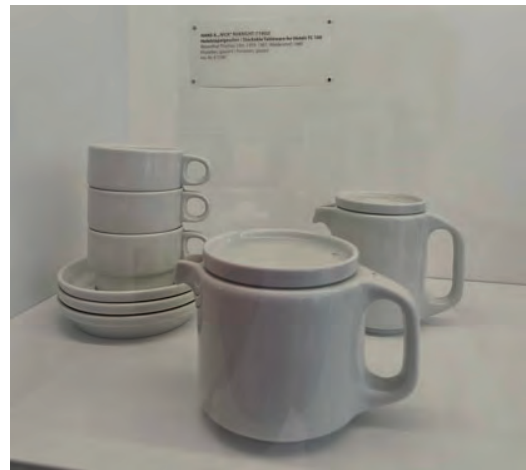


Figure 20.

Figures 18, 19, 20: The water bottle in the first image is only one of a few designed object in this permanent design exhibition doing what it is designed to do: storing water and providing it to a gallery attendant as an act of care – keeping a human being alive. While there are pots, jars and bottles exhibited in the vitrines, there is no space for those bottles which are in use – they need to be hidden from visitors’ and superiors’ eyes. Photos: Anja Neidhardt-Mokoena.

Currently design museums seem to prioritize taking care of preserving objects. Less care is for instance directed towards the bodily experiences and physical needs of the visitors: like offering (enough) comfortable benches and possibilities for eating and drinking. But also, since design is usually defined as a combination of form *and* function, what if design museums would enable ways of exploring things through touch and use, and not merely through looking at them?

Then there are also those human beings who are neither decision makers nor visitors, and who are often unseen and their experience of the museum presumably even less cared for: like gallery attendants. Long hours of standing and walking in stuffy rooms, the few present benches (which are not exhibits) are reserved for visitors to rest, and bringing a water bottle is hardly allowed (Fig. 18–20).

(19) María Puig de la Bellacasa, 2017, p. 67.

Following “caring as a transformative ethos” (19) shows that not only *other* things and attachments need our attention. It also matters who invites whom and what, on which terms and based on which criteria and definitions, and into which space. Apart from this, gathering humans and non-humans in caring ways might create new and other contexts in which design can be experienced and discussed.

4. CULTIVATING SPACE(S): SOME CHARACTERISTICS OF ALTERNATIVE DESIGN MUSEUMS

What if we, instead of trying to change existing design museums, aim at de-centralising them by envisioning and creating alternative design museums? What can we learn from how protest archives are working in terms of relational space? From our exploration the following characteristics emerge (Table 1).

OPENNESS WITH LIMITS

Protest archives cut things differently: They care and therefore allow for other gatherings, by taking a stance according to their own values. Compared to established design museums, we think of alternative design museums as more open in some aspects, but still excluding in others. There are different kinds of exclusions (20): Some discriminate against people and/or things, like when a group in power excludes those who are already marginalized. However, exclusions coming from oppressed communities can be self-empowering and lead to the creation of alternative spaces (21). These exclusions need to be negotiated and it is also important to have the possibility to un-collect things if they, for example, become less relevant. Openness with limits might be one reason why protest archives seem to be crowded, but still welcoming. It is precisely this kind of crowdedness that allows for new

(20) Eva Haifa Giraud, 2019.

(21) Ibid, p. 4.



connections and therefore also alternative futures to emerge.

PROTECTING AND PRESERVING DIFFERENTLY

Limited openness also means that there need to be some safety measures in place, mainly to prevent that the space gets (intentionally) harmed or even destroyed. Here again much can be learnt from activists (22) (23). Since many protest archives are run by and for the same people, there is more freedom to contextualize the information from one's own perspective, and there is also more trust that materials are treated respectfully. Here it is about finding a balance between protecting materials and making them accessible.

CROWDING

The Museum of Things in Berlin seems to be something in-between an established and an alternative design museum: The vitrines are crowded and there are several timelines visitors can follow (24). The museum speaks of things rather than designs, and maybe that's one reason why its collection holds much more than the typical modern design classics, but also things that are used in daily life, Kitsch and other things that are usually seen as ugly or childish. The Museum of Things also brings topics into the picture that usually are rendered invisible: It for example shows chest binders in combination with package tape. This gathering tells a very specific design story that unfolds from a queer perspective and life experience (25).

DESIGN WORKS THAT WORK IN TWO WAYS

Alternative design museums that are spaces enabling change rather than the preservation will collect differently while at the same time working on transforming overall structures. Working in two ways, on both content and structure, as Sheila de Bretteville (26) argues, is part of feminist tactics to redirect design. Since design is ontological, the collected and exhibited things need to allow for "ontological investigation of what design brings into existence, and thus, in turn, what design designs" (27). (Fig. 21–23)

METABOLIZING GATHERINGS

Following Clémentine Deliss (28) we suggest to see the collection as a body: breathing, living, changing, ... almost ephemeral: "No longer should anything be seen in isolation, but each inquiry becomes a reflection of temporary interdependencies between [design] works, people, objects, media, equipment, experiences, observations, laws, economies, and affects." (29) This could "initiate new relations between forms of art and emergent meanings, challenging the monopolies of the museum and university to produce and control new diasporic imaginaries." (30). Deliss thinks of "a museum without condition" (31). Here, any blank

(22) Ida Linander, Johanna Lauri, and Marcus Lauri, 2023.

(23) Sarah Schulman, 2021.

(24) Christina Zetterlund, 2013.

(25) VenidaDevenida, 2018.

(26) Sheila de Bretteville, 1973.

(27) Tony Fry and Clive Dilnot, 2003, p. 4.

(28) Clémentine Deliss, 2020

(29) Ibid, pp 112–113.

(30) Ibid, pp. 112–113

(31) Ibid., p. 113.

spaces are always in flux, serving as invitations for new connections and possibilities.

CARING AS A TRANSFORMATIVE ETHOS

This last characteristic is simultaneously the main guiding principle. Caring as a transformative ethos is a reason for welcoming crowding and even messiness, for focusing on design works that allow for ontological investigations, and for a metabolizing collection. Furthermore, such an ethos also means taking care of the bodies that navigate the respective spaces: In protest archives like the Lesbian Herstory Archives visitors are welcome to use the kitchen to make coffee, and there are also enough comfortable sofas and chairs that invite to stay long, while reading, thinking and discussing. As this paper suggests, following caring as a transformative ethos can show us that alternative design museums could be spaces for practicing hope (32).

(32) Paulina de los Reyes and Diana Mulinari, 2020.

5. CONCLUSION

This paper started with the question how design museums might contribute to change rather than preservation of the trajectories that have led us to an unsustainable present. In order to approach this question, we explored the phenomenon of established design museums apparently having much blank space in their exhibition rooms; while they seem to not make space for whatever deviates from prevailing narratives and norms. We have looked to the example of protest archives, which seem to be crowded, even though simultaneously open to accommodating even more. We approached this phenomenon from a feminist perspective as well as in terms of relational space, and thinking with the concept matters of care. This led us to see a need for collecting and exhibiting things instead of objects, which inspired us to formulate a set of characteristics: openness with limits, protecting and preserving differently, crowding, design works that work in two ways, and metabolizing gatherings. It is possible, and even needed, to have a great variety of spaces with such qualities that follow caring as a transformative ethos – and they might be called alternative design museums. They could enable us to leave the trajectories that brought us to the unsustainable present, to respond to urgencies and open up more just futures.

Table 1: Characteristics of alternative design museums.

Caring as a transformative ethos				
<ul style="list-style-type: none"> the main guiding principle and reason for generous crowdedness taking care of the body of the collection and the bodies that navigate the respective spaces nurturing hope and therefore alternative, more just futures 				
Openness with limits	Protecting and preserving differently	Crowding	Design works that work in two ways	Metabolizing gatherings
<ul style="list-style-type: none"> more open in some aspects, but still excluding in others, according to their own values 	<ul style="list-style-type: none"> finding a balance between protecting materials and making them accessible 	<ul style="list-style-type: none"> several timelines lead through the crowded space(s) 	<ul style="list-style-type: none"> collecting differently while transforming overall structures 	<ul style="list-style-type: none"> the collection as a body: breathing, living, changing
<ul style="list-style-type: none"> based on ongoing negotiations 	<ul style="list-style-type: none"> a space run by and for the same people 	<ul style="list-style-type: none"> rich context that allows for various readings, e.g. based on lived experience 	<ul style="list-style-type: none"> as part of feminist tactics to redirect design 	<ul style="list-style-type: none"> without a condition
<ul style="list-style-type: none"> creates a crowdedness that allows for new connections and therefore alternative futures to emerge 	<ul style="list-style-type: none"> a space built on trust and responsibility 	<ul style="list-style-type: none"> collecting “things” rather than “designs” makes space for an expanded design definition 	<ul style="list-style-type: none"> enabling for ontological investigations of what design designs 	<ul style="list-style-type: none"> blank spaces are always in flux, serving as invitations for new connections and possibilities



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SPACES FOR FRICTION? USING THE CONCEPT OF FREE SPACE AS A STARTING POINT FOR SUSTAINABLE AND DESIRABLE FUTURES

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ABSTRACT

Free spaces can serve as a blank canvas for the projection of desires and the exploration of possibilities – but these spaces can also create uncertainty or friction due to the potential for various interpretations and outcomes. This friction can be exploited – because it generates questions that help to reflect on our actions in design teaching, theory, and practice, and can thereby generate new ways of thinking. In the context of the great challenge in design – designing in the context of the emerging climatic catastrophe of the Anthropocene – these exploratory questions can be of major importance. Therefore, this paper uses the metaphor of free space to outline, in three arguments, how the image of free space can influence our thinking about design in the context of sustainability.

INTRODUCTION

A free space – the unexplored opportunity – can serve as a projection surface for desires or even as a promise of possibilities. But a free space – the void – can also produce uncertainty or friction (or even resistance) because it allows so many possible fillings – from which new ways of thinking, ideas and visions can emerge. New ways of thinking, I would argue, are

especially important for major challenges: in order to address large-scale and unpleasant problems, it is necessary to question established positions – especially if the problems are self-made. Probably the greatest current challenge in design can be seen in the context of an impending climatic catastrophe: How can we use design to help stop the process of global warming from continuing? It is not as if design can solve the problem of climate catastrophe – but currently it rather contributes to the problem and less to the solution; in any case, the consideration of the climate crisis quickly allows a link to design, after all, design processes mostly end with the conception, design and production of things that consume resources. Or, as Niko Paech puts it, there is a design solution at the beginning of every production. (cf. Paech, 2013, p.204).

And even though sustainable design has been very present in theoretical and practical design discourse since the 1970s at the latest, and even though the responsibility of designers has been emphasized – often polemically (it would exceed the scope of this paper to outline the historical positions in this debate, but perhaps Victor Papanek [1971] could be mentioned as a prominent example, given that his position has been widely received) – for decades, there are still very big steps to be taken to formulate and establish the concept of sustainable design. In the following paper I would like to use the free space to take up different arguments and approaches from the context of sustainable and also posthumanist or pluriverse (cf. Escobar, 2018) design – in order to produce questions that can help to anchor the ideas of sustainable design in the discourse through friction and reflection. For this, I will use three levels of argumentation to show how strategies or ideas for a



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sustainable and desirable future can be derived from the void.

To do this, we first need to briefly outline the blurred concept of sustainability: What does “sustainability” actually mean? And is it a meaningful term? A very tangible definition comes from John Ehrenfeld, who argues that sustainability is the “possibility that humans and other life will flourish on the Earth forever” (Ehrenfeld, 2008, p.49). Thus, it is not – as so often misunderstood in actual design – about artifacts lasting as long as possible or about their resource-efficient design or recyclability; it is not about artifacts, it is about life. Of course, this leads to the reference to the carrying capacity of ecosystems and resources, which is necessary to ensure living conditions for current and future generations: Objects and solutions must be designed to enable long-term life on the planet. Ehrenfeld also explicitly includes non-human life in the discussion, which is not only ethically justifiable, but also seems to make sense in the context of interdependence. We always work in relation to our non-human environment – Anne-Marie Willis calls this interdependence a Double Movement: “we design our world, while our world acts back on us and designs us.” (Willis, 2006, p.70).

If sustainability is understood as this described possibility of eternal existence (“flourish forever”), the necessity of a sustainable design results from the transgression of planetary boundaries. A sustainable design must address the climatic changes in the Anthropocene – meaning the fact that human behavior as a geological force is decisively shaping the Earth’s climate (cf. Crutzen and Stoermer, 2000), which will make it uninhabitable in the long run. It is, Donna Haraway argues, our task to make this Anthropocene as brief as possible (cf. Haraway, 2016, p.100). This task is not optional – it is imperative to solve in order to exist as humanity in the long term.

I now want to argue why and how new possibilities of a sustainable way of thinking can develop from the thought of absence or emptiness – from a space left free – and I want to do this in three (partly interconnected) steps.

1 — THE FREE SPACE AS A SPACE OF RESPONSIBILITY AND POSSIBILITIES

First of all, we can conceive of the future as something indeterminate that is influenced by the actions and decisions of humans in the present – as free space that can be filled with ideas, conceptions and visions. Of course, philosophically, understanding the future is much more complex, and of course, as will quickly become obvious below, we can also see the future as something that comes into being even without our actions – but this simplified view serves as an

argumentative aid here. Tony Fry describes two possible ways for a change: Either by accident or as formulated intention – thus by design (cf. Fry, 2011, p.viii). This implies that the free space of the future will either be filled somehow – or it is to be seen as a possibility and an opportunity. This also directly emphasizes the role we can and must play as individuals and as a society in order to fill precisely this space. From this role can be drawn a reference to the responsibility we bear. If we consider the free space of the future as a real space in which we place our artifacts (as designers), then this provokes questions: what does it do in this space – after I have designed it? What happens when I, as a designer, leave the space – does the artifact stay? Outside of explicit processes (like the circular economy), there is surprisingly little understanding in design about what happens to things after they are designed and produced. As Ron Wakkary, among others, points out, in design we have little understanding of how things end up – and possibly there are even multiple endpoints for the objects we design: When we design something, the intended function of the object ends first – by sorting out the used plastic bag, for example (cf. Wakkary, 2021, pp.173–187). But then, after all, the object has not left the space (which I will continue to use as an image here) – the material produced continues to exist as a form of waste (cf. Ibid.). Above all, if we imagine space in our absence, then this can have implications for our actions as designers: How do the things we design – if they still exist – relate to future generations who then enter the space? And how do the things leave the space behind when they no longer exist in their original function? Do they have traces – and do these traces affect the space? From such a metaphorical image, one can directly see a reference to the sustainability strategies established in the discourse: consistency, efficiency and sufficiency, which will be discussed later on. Especially efficiency – i.e. the more productive use of matter and energy, the more efficient use of resources – can be critically discussed with this metaphorical image of space for future generations, because even a more efficient use of resources in the present time can (and will) significantly – and negatively – change the space of future living beings.

But the image of emptiness also provokes the question of what a desirable space actually is: If we see design detached from the status quo and formulate it as a wish – what would our future look like? How do we fill the space? It is a recurring problem in design to simply look at an existing state and derive insights about products of the future (in user research, these are common biases: if there are currently no users from a certain group, they often don’t show up in the research – and continue to be ignored). Intentionally leaving a space free can help to ignore existing (dependencies and) problem areas – and

formulate a demand: The free space is a space for a long-term desirable future.

In order to fill this free space, it is crucial to attain a profound comprehension of the outcomes of our actions, encompassing not only technological or resource-based aspects but also social and political considerations. This entails expanding our knowledge of sustainability strategies and establishing a comprehensive awareness of the implications of resource use in design processes (which must embed themselves in ethical discussions of the future and responsibility). Nonetheless, envisioning a desirable future necessitates a primary conceptualization of the intended outcome that surpasses the confines of design processes. Such a pursuit requires a pervasive exchange and dialogue, along with the fortification of transdisciplinary and democratic processes in design.

2 — THE FREE SPACE AS A SPACE FOR THE INTERESTS OF OTHERS¹

We can also consciously use free space in the context of sustainable design: as consideration, as renunciation. We restrain ourselves, we give other interests a space. From the perspective of the Global North, this could already be seen in terms of a global conflict of interests – after all, not all people are equally responsible for the ecological status quo, and there are strong links to issues such as capitalism, colonialism, or the general imbalance between the Global North and the Global South (or “racial hierarchies”), which are discussed under terms such as Capitalocene or Plantationocene (Davis et al., 2019), or even under Haraway’s concept of Chthulucene (2016). At the same time, we are not all equally affected – global inequities are spinning up here as well. Giving non-self interests a free space can thus be read in the context of global interdependencies. And of course, the free space could also be used to fill it with potential interests of future human inhabitants of the planet.

But other interests can also be understood as the interests of non-human entities: We could try to establish design processes that reflect and take into account the possible interests of non-human living beings. The no(n-Human) Consent Form by Daniëlle Ooms (2021) can be understood as such a step: In this form, Ooms takes the possible perspective of the nonhuman actor involved, aiming to critique the lack of knowledge about the involvement of nonhuman actors in scientific research and to enrich ethical debates about collaborating with or using nonhumans. The form

designed by Ooms asks, among other things, whether the research or design procedure will “cause harm or discomfort to the participant in any way” (in the example, it is a particular algae) (Ooms, 2021) – also noting that this living being cannot consent to the process. Such a process is thus characterized on the one hand by the need to make assumptions about the interests of others (which can be difficult) and by the fact that the process is difficult to scale – but ideas like this reveal the need to rethink processes. From my point of view, what is exciting about the thought process of the consent form is not only necessarily the area of research – because here, of course, the legislation for animal experiments already applies quickly in some cases – and also not the direct damage, because this is presumably obvious. What is exciting from my point of view is that the possible interests of non-human actors are included in design processes – and this can of course be thought through further by including not the direct harm, but the long-term harm – in the sense of a technology assessment – in the considerations. The question is thus not whether the object of the design process directly harms a living being (for example, the animal because it is processed as a material), but whether it has long-term harmful consequences – like, to return to the example, the plastic bag, which can cause immense damage long after its actual use. As with technology assessment, such a discussion can be complex because some consequences were and are not seriously predictable – but the question of long-term harm does not end the design process with production, but adds use and potential waste to the discussion. Even considering the language – for example, speaking of life-centered design, humanity-centered design, posthuman design, post-anthropocentric design, or climate-centered design – can help form an understanding of divergent interests. Design practices can be understood as a cross-species endeavor – this is not only ethically understandable and important but should also be a human interest in terms of interdependence.

Thus, making the space available to others – or: postponing one’s own need – offers the possibility to recognize and reflect divergent interests. To establish design processes founded on the notion of considering the requirements of non-participating entities, a comprehensive understanding of global interdependencies and the far-reaching consequences of one’s actions is imperative. The free space of possible interests can thus focus on the abolition of the privileges of the Global North, it can reveal divergent

¹ *Others* is a difficult word, which is meant here in a completely value-free way: It is simply not about one’s own (short-term) interests or the interests of an environment on a small scale.



understandings of the relationship between nature and culture, or it can provide a stage for non-human actors (cf. Haraway, 2016; Fry and Willis, 2017; Escobar, 2018; Wakkary, 2021). It forces us to make ethical choices because we must weigh and value all at once, negotiating others' perspectives, values, and needs – the adoption of post-anthropocentric perspectives, in particular, demands an exceptional level of empathy, given that such perspectives involve entities that exceed human comprehension and necessitate ethical deliberations to be addressed appropriately. By providing space for *others*, our ideas and objectives can become more equitable and empathetic, thus enabling us to move closer to achieving a more desirable future.

3 — THE FREE SPACE AS A SPACE FOR ... NOTHING?

In the context of sustainable design, I would also like to mention strategies established in the discourse: Efficiency, consistency, and sufficiency. While consistency strategies deal with the technical side of design – for example, with material cycles – the idea of efficiency addresses how resource productivity can be increased. Inherent in both approaches is the idea that new things must be invented (or processes optimized) in order to act sustainably – they correspond to the basic understanding established in design that problems can be solved by design. Sufficiency, on the other hand, can be understood as perhaps the most radical of these strategies – here, the focus is on minimizing resource use, including by reducing supply and demand. In the context of transcending planetary boundaries, sufficiency can be argued very convincingly – especially in the Global North: Sustainability can also be discussed at the level of renunciation – and thus product-producing design can be questioned. Non-action, non-production can have much more impressive consequences in the context of the climate crisis than actual activity and supposedly sustainable production. Often, the non-existent object is better than the efficient one – the one who does not produce anything is mostly acting in a more ecologically sustainable way than the one who produces with a low resource input (unless, of course, the produced object is mandatory and replaces another object that consumes more resources during its use).

Through the idea of sufficiency, an understanding of design can be established that not only detaches itself from growth, but also conceptually from production. Design usually means creation and construction – it is usually about exactly the opposite of a free space: it is about filling spaces – with ideas, visions ... and ultimately with artifacts. Not doing exactly that is a major step: simply not designing things is difficult to reconcile with the activity of the designer (even if design does not, of course, mean basically creating

physical things), but a pressure to justify can be derived from the idea of non-action. If the basic understanding that circulates is that, in the spirit of sufficiency, non-production would have to be the target of a design process, then this gives rise to the need for an explanation if an artifact would then be produced after all.

The notion of refraining from action constitutes a significant challenge with substantial implications for the teaching and profession of design. In design processes, observance, contemplation, and prudence may emerge as pivotal virtues, which could necessitate an overhaul of current practices. This interpretation of design fundamentally challenges established conventions and self-perceptions, yet its radicality could prove aptly suited to address important questions in the pressing crisis of global warming. Leaving a space free can thus also mean withdrawing from constant production and the current (and capitalist?) understanding of design.

CREATE FRICTION – DISCUSSION

Intentionally leaving a space free is a thought experiment in the context of sustainable design. It is a concept that generates exploratory questions – and that certainly generates a form of friction. The assumption, quite common in design, that design can solve problems and act in the interests of humans can be challenged by this, because the free space reveals problems and shows diverging interests. The questions about responsibility and the possibilities of a desirable future show the need to fill the rather pronounced vacuum of a design ethic. The questions that arise when considering the divergent and conflicting interests of various human and non-human entities produce the need for design processes that take these interests into account. The questions that produce the possibility of non-design expose the dependence on capitalist logic – they may even challenge the basic understanding of design and the professional profile. Friction is thus created – the free space perhaps produces the uncomfortable feeling of a mandate: there are so many things we need to question or rethink in design if we seek to create a sustainable and fair future. None of these outlined free spaces carry direct answers; no direct methods or approaches can be derived. Yet they are significant because they provoke us to reflect on and question our assumptions and ideas about design and sustainable design. They challenge us to broaden our perspectives and encourage us to explore new avenues and develop speculative solutions – while also exposing us to potential limitations and weaknesses in our thinking and actions. However, since free space exists only as a metaphor, but we are actually in a complex construct of various dependencies, interests, needs and constraints, and above all the status quo has great implications for the future (the unfolding of the future is a phenomenon that also happens independently

of our action or influence.), the pressing nature of ongoing developments (such as global warming) should also create friction and discomfort – which in turn underscores the need to discuss the friction that the metaphor may have created. By engaging with free space, we can approach sustainability and design in a deeper and more conscious way: We can break free from old patterns and ways of thinking and develop new ideas and perspectives to create a better future for all.

CONCLUSION

The free space makes it possible to link different discourses on sustainable design and a posthumanist understanding of design – the void can be filled by questions and thought-provoking ideas that create a friction that can help address the great problem of contemporary design. Free space as a conceptual metaphor can irritate the self-image of design and designers – and can change how we receive current processes and products of supposedly sustainable design. Free space does not show solutions, but reveals problems: it has an ethical dimension that makes it imperative that processes in design teaching, research and practice are critically reflected upon.

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ECOCRITICAL EXPERIMENTATION WITH OBJECT THEATRE AT A MUSEUM

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ABSTRACT

Human activity has globally affected the earth's climate and ecosystems. The museum sector has agency in representing topics of societal significance and climate change. The experiment presented here, took place at a history museum to re-work human subject positions in the museum. The method of object theatre with a departure in an ecocritical perspective was evaluated. The result shows that the method might retain a colonial perspective towards animals and nature. Still, the method brings a change in who is the subject in the story, a possible shift in perspective and an incentive to care and act. The participants talk about the experience of a *less abstract relationship to the object's origin and life cycle* and a *curiosity or a discovery of a knowledge gap*. The method can be used to bring a greater attention to the needs of nonhumans in collaborative and participatory design processes.

MUSEUMS IN ANTROPOCEN

The Anthropocene can be defined as the time when human activity has globally affected the earth's climate and ecosystems. It includes indicators as global climate change, shifting global cycles of the weather, widespread pollution, radioactive fallout, plastic accumulation, species invasions and the mass extinction of species (Ellis, 2018). Museums has since long been

encouraged to take a greater role in exploring things that matter in the world (Koster, 2006). The research of Fiona Cameron investigates the agency of the museum sector in representing topics of societal significance and climate change. She describes that museums are ideally placed to concretely re-work human subject positions and frame and promote posthuman theories and practices of life through curatorial practice. Natural history and history museums frame specific subject positions and relations i.e., the ordering and exhibiting in museums are principally understood in terms of human subject/object relations, between humans, human others, non-humans, and technology through exhibition (Cameron, 2018). With Anthropocene as a backdrop, museums are thus inspired by the ontological and epistemological shift that has taken place in the field of environmental humanities and the responsibility to be relevant in a turbulent world. Therefore, museums develop new public practices and exhibitions (Cameron, 2015; Nordbäck and Rotbain, 2022).

DESIGN AND BIOINCLUSIVE ETHICS

The experiment *ecocritical object theatre* studied here, is grounded in a bio inclusive ethic which conceptualizes nature as a collective of human and nonhuman living beings that pursue their own needs while allowing and enabling other living beings to pursue theirs. In an overview over bio inclusive collaborative and participatory design, Emilija Veselova and İdil Gaziulusoy (2021) points out that the anthropocentric values are strongly manifest in the dominant discourse and practice of design and that stakeholder participation in design processes further supports satisfaction of human needs and wants. The authors show that over time, the design approaches has diversified, in for example co-design, participatory design, participatory innovation to address various aspects of participation. Despite this diversification, the dominant anthropocentric value base remained.



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They argue that collaborative and participatory design processes tend to focus on the needs of humans and human-made systems and leave out considerations about natural nonhumans. They also point to the opportunity to include nonhuman perspectives in collaborative and participatory design processes since the processes encourages and supports the representation and participation of different perspectives (Veselova and Gaziulusoy, 2021).

Arturo Escobar (2018) mirrors and expands on this idea when he discusses the ontology of design in his book *Designs for the Pluriverse*. He talks about a critical mass of designers that redefines design completely from its conventional meaning, a meaning tied to capitalism and modernity. Design is instead becoming a political technology; he points out that design then moves to become a space for really thinking deeply about societal change transformation towards sustainability. Design is in the ecocritical object theatre interpreted as a participatory process of investigating, understanding, reflecting upon, establishing, developing, and supporting mutual learning between multiple participants in a collective “reflection in action” (Simonsen and Robertsson, 2012) to support a societal transformation towards a sustainable future.

Theatre is another concept in the ecocritical object theatre. In this experimentation theatre is understood in a certain way: as participatory theatre. Participatory design and participatory theatre as used in this context is closely related. Participatory theatre approaches engage with communities and facilitate group processes in which multiple stakeholders come together to explore a theme or a question together through theatrical methods. Participatory theatre works with people’s ability to imagine together and immerse themselves in fictitious play yet recognise and reflect on themselves through the theatrical setting. It enables a blend between reality and fiction. It can also be said that theatrical ways of working do not try to give answers or solve problems, but instead pose questions and make us reflect upon challenging dilemmas (Friis et. al. 2015; Ryöppy 2020).

THE ECOCRITICAL OBJECT THEATRE EXPERIMENT

The ecocritical object theatre experiment took place at a history museum and was an attempt to re-work human subject positions in the museum. The museum’s exhibitions are designed with sections displaying objects that represent historical events chronologically from ancient times to the present. Here the story of man is told with man in a subject position through, for example, periods of iron extraction, the introduction of new science, and progress in modern era. There are built environments in the museum to support the visitor to identify with man in history. In the encounter with the museum’s exhibitions, the visitor fills in the blanks based on what is “served” but there is something

missing, for example the possibilities to identify with the animals’ and nature’s stories.

Redesigning an exhibition requires money and resources that starved museums do not always have. This research investigates a method to introduce nature and animals as subjects in representations of history. It is a method that in first-hand does not change the form and structure of the exhibitions but brings the opportunity to open for other voices.

PARTICIPATORY OBJECT THEATRE WORKSHOP

In 2022 two groups explored the ecocritical object theatre’s possibilities to include nonhuman stakeholders in the representation of history. Two workshops took place in the current exhibitions. The two groups were surrounded of objects, environments, sounds, and smells related to the history of the county from ancient times to the to the 21st century. There were in total forty participants in the workshops. One group consisted of researchers, artists, writers, and museum professionals. The other group brought together museum educators and exhibition curators from mid-Sweden from both communal, regional, and private museums. The exploration embraced object theatre in the exhibitions followed by a group discussion. During the group discussion the author of the paper took fieldnotes. The discussions were situated in the exhibitions in spaces dedicated for group reunions. Those spaces can be described as small, built-in amphitheatres, shielded by walls.

The exploration with the museum educators and exhibition curators was additionally followed up by an online questionnaire. Seven participants took part in that.

The participating exhibition producers are the ones who are responsible for the form and development of the exhibitions, and they were interested to explore the exhibitions from an ecocritical perspective and reflect together with others on how the exhibitions could be developed. For their part, the educators, artists, writers, and researchers wished to develop methods and stories for sustainability issues in public work in the frame of a larger project. There was a common goal for the participants to develop different practices for sustainability.

In this study the guiding questions were: How can the ecocritical object theatre’s possibilities to include nonhuman stakeholders in the current exhibitions be understood? In which way might the method acknowledge nonhuman contributions in the cultural history? The research also aimed to study if the method gave possibilities to acknowledge any damage historical events might cause to nonhumans.

The ecocritical object theatre experiment workshop was developed around three phases:



- Phase 1: The individual journey in the exhibitions
- Phase 2: Sharing life stories in pairs
- Phase 3: Collective reflection

PHASE 1: INDIVIDUAL JOURNEY IN THE EXHIBITIONS

The aim of an object life story is to invite people to tell a story about the whole life of an object. The first step is an individual journey in the exhibition (see Figure 1). The journey starts with the encouragement: – Take a walk in the exhibitions. Choose an animal, a piece of nature or a thing to which you are drawn.



Figure 1: Individual journey in the exhibition. Take a walk in the exhibitions. Choose an animal, a piece of nature or a thing to which you are drawn.

Originally, the first phase was articulated as to search for *an object* you are drawn to, a phrasing used in an earlier development of the method (Schaeffer et al. 2020). The very word object (although in the museum world it also includes animals and elements of nature in the collections) led to an exclusion. It did not create a sufficient push for the human participants to feel free to choose to be an animal or a plant or another part of nature. At the subsequent workshop, the question was modified and instead solely being asked to look for an object, animals and nature was more clearly articulated as a possibility in the individual journey.

PHASE 2: SHARING THE LIFE STORIES IN PAIRS

The participants (A and B) paired up around one of the chosen animals, pieces of nature or a thing (see Figure 2). If possible, they were encouraged to hold the chosen object in their hand or, if that was not possible, touch it or stand close to it. During the first round, B listened carefully while A had some minutes to tell the life story of that object, from the day it was “born” until today, including how the object ended up in the museum. The person telling the story was the object. So, A stuck to the first-person perspective, and used the “I” form. A imagined the whole history of that object, which might

include past experiences of being extracted, produced, sold, distributed, found, used, reused, misused, abandoned, or disposed.

The story also included thoughts on the question: –

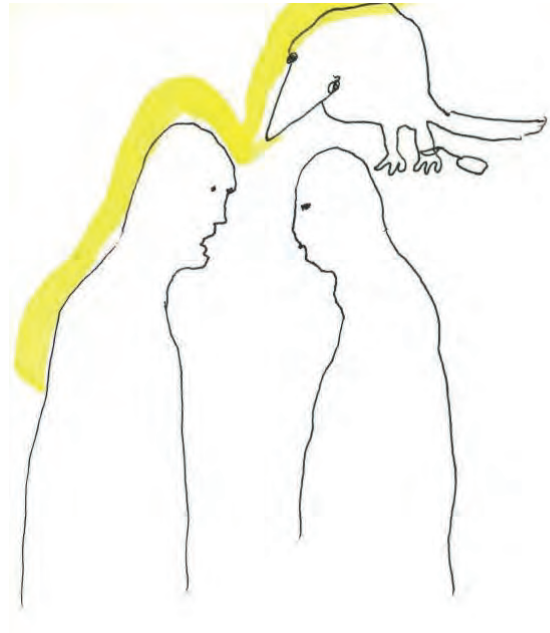


Figure 2. During the first round, B listens carefully while A tell the life story of the chosen part in the exhibition with the I-perspective, from the day it was “born” until today and into the future.

What will happen with me in the future? The stories are not only based on the object’s traits like the looks, weight, material, size, or age, but also the feelings and emotions that the objects are associated with and the relations that becomes a part of the story and different endings of the life (see Figure 3). In this part of the

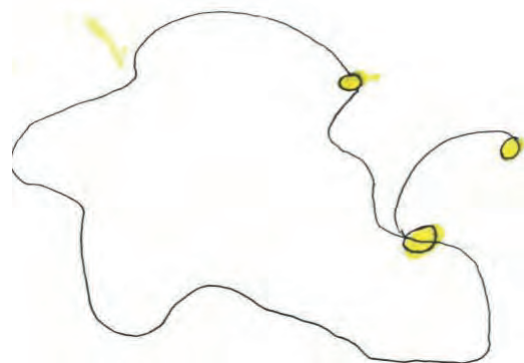


Figure 3: The life story of an animal, a piece of nature or a thing is told. During its path of life, the story might include different “stations”: experiences of being hunted, produced, sold, distributed, found, used, reused, or misused. In the end of its life the object could go back into the life cycle, reborn as a new object, but sometimes it ends up as waste, indicated in the figure as the branch on the right-hand side with an end station.

workshop the sound from many people talking was increasing in the exhibitions in both workshops.

PHASE 3: COLLECTIVE REFLECTION



Figure 4. During the collective reflection there was a possibility to talk about the experience of the object theatre, share how it felt to be the object and future development of the method.

The improvised object life-stories were then shared with the full workshop group and the conversation was slowly easing into a reflection over the experience and what other reflections that come to mind related to the participants own knowledge, profession, and climate change (see Figure 4).

RESULT

The method opened for an inclusion of nonhuman voices within the current exhibitions and unlocked perspectives of various experiences of the nonhumans – and acknowledges *fictious* nonhuman stories and nonhuman contributions. It also gave possibilities to acknowledge the damage historical events might cause to nonhumans. Three examples of stories from the workshops will be presented here: the crow, the work overall and the wood.

THE CROW

The life story of the crow (see Figure 5). The crow was in focus for two human participants and the life experience of the crow was formulated in diverse ways. The first story was touching on the feeling of being important when in earlier days it was classified and given a number.

“From the beginning I was in a school collection. I was someone, I had a special number, I was classified. Here in the science room, I am no longer an individual, but a representative of an idea. You don't even see the note anymore.”

The Crow

In the second story the crow articulated the difficulty to reach the humans with its experience of life and the inability/deafness of people to let the experiences of animals and nature into their lives and into their exhibitions and history.

“During my time at the museum, I learned human language. Me and my four bird friends talk in bird language. But in human language I can't get through. So lately I have thought out a new way to connect with people so they can connect with nature. I work with the gaze and with thought transference. It actually works well.”

The crow



Figure 5: The crow took the talking space, telling both about its history and its relationship to the human visitors in the exhibition on the history of science.

THE WORK OVERALL

“I am an unused work overall. I'm unused, what does that mean? I come from the oil, deep in the earth.”

The work overall

The second example is a working garment, thought to be a work and protective overall (see Figure 6). Its reflection evolves around the fact that is “born” and produced in a tissue with a lot of polyester in it, about 50 years ago. A great effort and nature resources were used when producing the synthetic fabric. Despite all





Figure 6: I am an unused work overall. I am unused, what does that mean? I come from the oil, deep in the earth.

these effort, energy, and resources the working garment was never used.

This story acknowledges the nonhuman perspective and the contributions of nature. In the group reflection afterwards the fictitious story of the overall opened a reflection about a possible knowledge gap. Do we actually know where the material polyester come from, is it oil or is it something else? The garment helped to open a reflection of missing knowledge and missing stories from an ecocritical perspective in the exhibitions. The relation between progress, industrialism, materialism, and its effect on nature in the modern society was not covered in the exhibitions.

THE WOOD

Staying with a part of the exhibition and talking from an I perspective was for some participants a strong experience. One participant was drawn to a piece of wood (see Figure 7). The participant expressed: I was the wood; I felt such tenderness. I started to cry when I talked about my life.

In the collective reflection afterwards, there was a conversation related to this story of the piece of wood. It was about the role of the woods in the area and the clearing of forests that were needed to produce iron. How important the charring wood was and to get it



Figure 7: The pieces of wood in an exhibition scenography aiming to tell the story of man’s knowledge of the construction of a medieval blast furnace [masugn] and the process to extract iron.

almost all the forests disappeared, and new lands had to be taken.

OTHER REFLECTIONS OVER THE METOD

The relations between the objects and human history came forward in the collective reflection session. One participant expressed the deep experience of being a container for gasoline and the wakening memories of the smell in the childhood in northern Sweden. There was reflection over the fact that the method was a "a way to bring objects back to life" and the workshop was filled with lust and not a feeling of “do homework”.

The method engaged one participant to ask more questions, when being in the role of the listener:

“I found the dramatized way of telling makes it easier to make the description more engaging. It is also good that you, as a listener, ask yourself more questions when the subject spoke in the I-form.”

Museum educator E

One reflection in the group was also that staying with a story of an object is a new way for them to work. It evoked empathy and tenderness. In the conversation a change in relation was put forward, a feeling of a different relationship with the “things” said that they become more valuable. The feeling of an urge, and I

feel an urge to take care of them in another way was also entering as a topic in the discussion.

One participant reflected afterwards about the feeling of fun and again the knowledge gap related to mining in Sweden:

“It was a fun way to use my general knowledge in areas that were close at hand based on the chosen subject. In my case the item was a spur forged in iron (I think). The story I improvised included topics such as history, crafts and mining, and set me thinking about my knowledge in those fields. For example, I became curious to find out more about the Swedish mining industry before the big mining boom in the 19th century. I strongly believe that this method can produce a similar effect in others.”

Museum educator B

The change of perspective and sustainability was also touched upon.

“The method meant that I had to put myself into the perspective of a thing. It was a good way to change perspective and I think that is very important in the climate change. Being able to fit into someone or someone else’s world view. Then it was fun to play theater, of course!”

Museum educator C

DISCUSSION

This method creates a space for reflection on stories other than those that the history museum usually talks about. The participants created the narrative themselves. It is possible to criticize the method since it is still humans who breathe life into the objects and through their limited knowledge, they animate the story with their imagination. That could mean that the participants with this method retain a colonial perspective towards animals and nature. Once again, we use the animals and nature for our pleasure or enjoyment. It is true that it is the human who plays the narrator in the experiment and becomes the bird, the overall, the wood and so on. Following Matthews (2006) arguing that the materialistic knowledge about nature rooted in anthropocentrism must be supplemented and even subsumed by more metaphysical, poetic, secular views on matter and nature, the method open for a poetic and imaginative relation to matter and nature. In the ecocritical object theatre there is a change in who is the subject in the story. Instead of looking *at* the animals and nature, the human participant imagines, in a way a perspective from inside the animal, out of the booth from the place in the exhibition, from the place of the wood on a wall and thinks back to the forest where it stood. The method brings a possible shift in perspective and an incentive to care and act. In the shift in perspective, new experiences arise. For example: *compassion and empathy* with the animals and nature, and the objects become *more valuable* because the person has devoted time and attention to it. The objects relational story comes forward, interwoven with

childhood memories and not a kind of thing that could be left behind, but *taken care of*. The experiment talks about the *experience of a less abstract relationship to the object’s origin and life cycle* or alternatively a *curiosity or a discovery of a knowledge gap*. The stories focus both on the past, on the present and a possible future. These kinds of experiences could be a small step to inspire us to re-imagine our society. As a development it would be possible to introduce scientific research related to nature and animals and to global warming.

CONCLUSION

The method opened for an inclusion of nonhuman voices in the current exhibitions and for various experiences of the nonhumans. This method is a way for humans to scrutinize which design goals stem from dominant worldviews and getting in touch with objects (matter and nature) and their history. The method opens a path for the expression of the emotional aspects of objects, allowing to reflect on current temporal social norms. The method also gave possibilities to acknowledge the damage historical events, like iron production, might cause to nonhumans.

The method can be used to bring a greater attention to the needs of nonhumans in collaborative and participatory design processes. Further research is needed to study more in detail in which way the method could be developed to acknowledge nonhuman stories and contributions to the representation of history in museums.

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DESIGN IMPLICATIONS OF FEELING PLAYFUL: PLAY MOODS + ATMOSPHERES IN DIALOGUE

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ABSTRACT

Based on a research project *Play Stories* about play design and embodiment, the aim of this paper is to explore how a fruitful combination of theories about play moods and concepts of atmospheres can enrich the field of play design. The paper explores the implications of this conceptual pairing through two design experiments. It shows how, while it is possible to design for different moods, play's atmospheric qualities insist that designers attend to how these moods *emerge*, and the shifts that happens when the moods emerge. The main contribution of the paper is to point to the following design implications: Atmospheres help us understand the dynamic of moods, and we therefore have to design for several moods; atmospheres show us the multiple elements that can configure when designing for several moods; and atmospheres orients us to emergence, and show the importance of designing *for* fluency, which does not mean that the design itself has to be fluent. The focus on atmospheres hints at 'the space intentionally left blank', the ineffable and felt qualities that always evade precise description.

INTRODUCTION

An understanding of play as a particular way of being in the world has a long history in scholarship (Sutton-Smith, 2001; Henricks, 2015; Karoff & Jessen, 2014), which is relevant to the emerging field of play design (Christiansen & Gudiksen, 2022; Poulsen, 2022; Jespersen, 2022; Feder, 2022; Skovbjerg et al. 2022). In this literature, play is conceptualised in a way where the meanings of what people do "make sense in relation to your [play] set-up" (Karoff 2013, p. 3). That is, play engenders new, experiential meanings and insights precisely because the setting, time and mood of the actions are understood by people as playful. An important concept for play design to help explain this is 'play moods' (Karoff 2013, p. 1), or "a state of being in which we are open and ready, both to others and their production of meaning and to new opportunities for producing meaning". Play moods distinguish particular encounters, actions, times and places as specifically playful, and in doing so enable novel and distinctive understandings of the world that makes it possible to design for play (Gudiksen & Skovbjerg, 2020). Understanding of play moods differ from psychological understanding of play, aiming at describing not an inner state of mind, but a connection and relation to world. Play moods are dynamically constituted in people's experiential worlds, and as such, arise in situations understood as playful, which are not always known in advance.

Recent scholarship on the concept of atmospheres, mostly located in human geography, relates closely to the notion of play moods (Sumartojo and Pink 2019, Anderson 2014). Atmospheres are distinctive conditions of feeling, co-constituted by the 'perceiving subject' and her surroundings (Anderson 2009), that share affective charges and create meaning for the people who participate in them; atmospheres concern connections



between people, material and space, as a shared middleground (Kinch & Højlund, 2013), a blank opening where unexpected practices can happen. Whilst not limited to play, atmospheres offer an attentiveness to people’s experiential contexts that can be applied to play, and by extension, how we might best design for play.

In this paper, we explore how a concept of atmospheres can come together with play moods, and how a dialogue between these concepts can support new understandings of, and possible interventions in, play moods, relevant for play design (Gudiksen & Skovbjerg, 2020). Based on a number of design experiments (Bang & Eriksen, 2019; Brandt & Binder, 2002) created in relation to the 2022 event Worlding Play, we explore the combination of their concepts and the value for design. The main contribution of this paper is to show how this theoretical dialogue can point to the development of novel design methods that can reveal, engender and shape play moods, and probe the understandings of the world that a play-ful framing makes possible.

In the next section, we trace the links between the concept of play moods and the concepts and methods of atmospheres. We then turn to the specific play moods themselves and, using examples from the Worlding Play event, show how they can be brought into dialogue with atmospheres. The paper concludes by discussing the design implications for this conceptual pairing, how an atmospheric attunement to ‘play moods’ opens up new approaches to design methodology, and the specific design methods that can emerge as a result.

THEORETICAL FRAMEWORK: PLAY MOODS + ATMOSPHERES

The aim of this section is to bring together the conceptualisation of play (Skovbjerg, 2021; Karoff, & Sand (2022), Skovbjerg Karoff (2013) and Skovbjerg (2021), play situations are understood as:

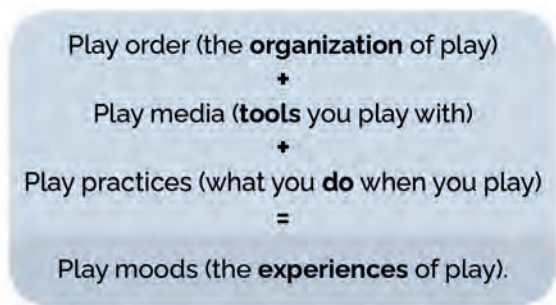


Table 1: The mood perspective

In this paper we are especially interested in the concepts of play moods and play practices. Through the notion of play moods, developed in design contexts, Karoff

(2013) articulates how people can ‘be in play’ in an affective, spatial, material and imaginative sense. Her concept of distinctive play moods, that we discuss in more detail below, supports the development of design moves that engender them, thereby helping participants become open to others in new ways, and enable new meanings and learnings in interactive situations (Gudiksen & Skovbjerg, 2020). This receptivity to the world and to other people in it, and to the ongoing possibilities engendered by such receptivity, is an important quality of a playful orientation to being-in-the-world. Building on Heidigger’s notion of Dasein, or an emplaced being that ‘exists in relation to the world’, Karoff describes play mood as: “the state of being where you are distinctly open to new meaning production and where the possibilities exist for that to happen. It is not something that comes from within the players or from the outside, but instead it is happening through our engagement with the doings of play and in our relations towards the people we are with” (Karoff, 2013, p. 8).

Atmospheres have been similarly described as co-constituted by people and their perception of their spatial contexts (Anderson 2009), thus always emplacing them. However, ‘while atmospheres cannot be reduced to the conditions that help them arise, these particular empirical configurations must at the same time be understood as absolutely implicit to them’ (Sumartojo and Pink 2019, p 4). Their emergent qualities imply ‘unacted out potential’ (Massumi 2015) where what might happen next cannot be known. At the same time, like play moods, atmospheres can be characterised by particular feelings - of dread, joy, excitement or anxiety - at different scales of collectivity. For example Edensor (2015) writes about how atmospheres change quickly at a football match, and the emotional effects on the people who co-constitute it. Shifting her focus to how atmospheres, like play moods, might be shared, Closs Stephens (2022) writes about atmospheres as a political force that play out at multiple levels, from the potential micro-interactions between strangers, to the feelings shared across national communities.

These are examples of collective moods in which things become possible - shared joy at a national sporting win, for example - that can bring people closer and dissolve other forms of difference, even if only temporarily. These might not always be playful in their openness, but they do transmit meaning and help to enclose some forms of identity, even if only temporarily (Closs Stephens 2022; Sumartojo 2016). What is important in terms of a dialogue with play moods is how people are receptive to participating in such atmospheres, and what this receptivity does to create shared meaning with others. Karoff (2013) also addresses this collective,

relational quality with the discussion of commonness of play moods, which means the practices that everybody does. Even if these are not necessarily discussed, there is a shared understanding that they are valuable. We know about their value, because people keep participating in them, even though they are not naming the value in a positive way (Skovbjerg, 2021).

Like play moods in design practice (Gudiksen & Skovbjerg, 2020, Skovbjerg, 2020), the concept of atmospheres is composed of different elements that configure in such ways that atmospheres emerge from them (Sumartojo and Pink 2019). These can be expressed spatially, for example in the material forms of a particular room and the sensory affordances of its arrangement, aspects which link directly to design. Atmospheres have *ongoing* qualities - that is, they are always on the cusp of change, often unpredictably, because they are constantly being made in the relationship between a given site and how people perceive and understand that site. As we will show below, this dynamism also characterises play moods.

Moreover, atmospheres shimmer somewhere between the person and the place, pulling the subject in, permeating their bodies but also with the potential for feelings of dissonance or resonance to emerge. Atmospheres are always felt (in a bodily, sensory and affective sense), and the indeterminacy of feelings means that atmospheres can be ambivalent or ambiguous. Sumartojo and Pink (2019) note that atmospheres do not precede the people who perceive or participate in them - they do not cling to a particular place. Rather, they emerge in the perception of people who help to constitute them. Like play moods, they are enacted through people's perception of them. They are activated by the presence and actions of people.

To activate play moods and their atmospheric qualities, play practices are a key anchor. Skovbjerg (2021) defines play practices as actions of play, and as such they take place in the rhythm between repeating something and breaking with the rhythm of something. These practices are akin to the elements that contribute to the emergence of atmospheres.

In the mood perspective on play, four different concepts for play practices have been developed, and they point to four different concepts for play moods to help conceptualise and design for play situations. Put differently, play practices help reveal how designers might shape or intervene in play, even if play moods are not able to be fully controlled. Below we will unfold the four concepts of play practices and play moods based on Skovbjerg (2021) and Skovbjerg & Sand (2022). Thinking with these play moods atmospherically offers new implications for design practice, as we will show in the analysis.

SLIDING FOR DEVOTION

Sliding play practices point to the play mood devotion: The aim is making as little change as possible from doings to doings. Imagine a play situation with LEGO, building with one brick, then another and another. The practices follow each other repetition, with the aim of creating the flow of continuity, where resistance or friction is not intended or desired. A play mood of *devotion* follows, which is characterised by an atmospheric feeling of lightness, of predictability and of settling into a well-known space.

SHIFTING FOR INTENSITY

Shifting play practices point to the play mood intensity. The whole body is often in the center for these play practices, and the direction, height and speed of practice changes bodily experience. On the one hand, shifting play practices have strong repetition as a play quality, but the practices, more or less unexpectedly, can change and thereby create shifts in experience. Think about a wild roller coaster trip in an amusement park: the trip starts quietly, repeating sounds, movements and intensities; it then moves towards the highest level; and then drops down suddenly, until coasting towards the end. It is precisely those shifts in speeds, heights and directions that creates the *intensity* of mood. The experience of nervous butterflies in your stomach as the rollercoaster carriage climbs, and an acute experience of tension in your body as you hold your breath and your heartbeat increases, only to be released before the next cycle of the ride, are qualities of the play mood intensity. This intensity points to change in the atmospheric conditions, and in that sense the ambiguity is more foregrounded.

DISPLAYING FOR TENSION

The play practices displaying contribute to moods of tension, and here the performative part of play is at the core. Displaying practices put the player and their skills on stage, either by dancing, or singing, or involving themselves in dramatic role play. The focus is about showing off and making oneself into an object for evaluation. Social interaction is the core of this play mood, not only involving the following of others but also being able to make the play practices "swing". This means making changes from one action to the next, by having the courage to interpret and find inspiration in how the social interpretations are met and judged. The common understanding of the atmospheric qualities of the play mood must be confirmed constantly, by asking, through the body and senses, if this is a shared experience. The play mood of tension goes together with the atmospheres engendered by these practices because of the need of the player to tune into and hold



the audience through changes in performance, and because the audience must remain attentive to the performative display.

EXCEEDING FOR EUPHORIA

The play practices characterised by exceeding focus on breaking, teasing, or destroying as the core of a play situation. Exceeding is about breaking cultural codes for what is expected in the play situation, to make change, and to make sure that play takes unexpected routes. Where the play practices in sliding for devotion focus primarily on repetition, the rhythm of exceeding is characterized by breaks or ruptures in play. A play mood of euphoria comes with the exceeding play practices, because an intense feeling of being the moment is generated, even if it is not possible to stay there forever because of the intensity. Think about a case of hilarious laughter where your body is drawn into the atmosphere - if you are outside this mood, it can be difficult to join the intensity, but within it, you may not be capable of stopping as your whole body is involved in the euphoric mood.

In this section, we have brought together play moods and their atmospheric qualities to highlight the moods' about-to-happen potential, the things that could emerge, but not yet released. We also show how connections between rhythms of play practices, spaces and materials are co-constituted. We will apply those elements to the analysis, after the methodology section.

METHODOLOGY, RESEARCH CONTEXT AND ANALYTICAL APPROACH

This paper is based on two design experiments created in connection with the research project Play Stories (2021-2022). The project includes researchers from Monash University (Australia) and Design School Kolding (Denmark), as well as a number of PhD students from both institutions, and external partners. In Play Stories, a number of design experiments were initiated in different contexts involving a range of participants and collaborators over a two-year period. The two experiments we discuss below were carried out in connection to the Worlding Play symposium, held in Melbourne on 19 September 2022 and co-convoked by Professor Lisa Grocott (Monash University), play researcher and facilitator Roger Manix and Professor Helle Marie Skovbjerg (Design School Kolding). Associate Professor Shanti Sumartojo (Monash University) did the video ethnography work of the activities taking place, and Professor Stacy Holman-Jones (Monash University) was a key collaborator.

The research project builds on Design-based research methodology (Barab & Squire, 2004; Brown, 1992;

Ejsing-Duun & Skovbjerg, 2019) in combination with Research through Design (RtD), reflected in its emphasis on the importance of the design experiment (Bang & Eriksen, 2019; Brandt & Binder, 2002;). The design experiments in Worlding Play were structured and organized based on models from Christiansen et al (2012) and Jørgensen, Skovbjerg & Eriksen (2021). In the context domain we investigated how play and atmosphere could be thematized; in the lab domain we planned the workshop based on design principles aiming at play moods; in the experiment domain we undertook the experimental activities together; and in the reflection domain we followed up with a reflection about our and the participants' experiences with the experiments (Skovbjerg, 2020).

To account for the atmospheric qualities of Worlding Play, we also turned to visual and sensory ethnography (Pink 2021, Pink 2015), and dialogic autoethnographic analysis of our experiences (Sumartojo et al 2019). This approach allowed us to bring our reflections on Worlding Play together with concepts we had developed in this and other scholarly work, in a process described as "productive of embodied theory: ways of feeling and knowing that emerge from experiences that are framed theoretically as they come about and become known on those terms" (Ibid). This was similar to what Sumartojo et al (2019) describe of their own dialogic and reflective approach - "the research exercise was a form of mobile and collaborative attunement to our atmospheric surroundings" - where we attended to the play moods during the symposium, and considered their relationship to atmospheres as part of our shared conceptual commitments as co-researchers in subsequent analytical sessions. In doing so we had to exercise our capacities as designers in devising and running the design experiment of Worlding Play, to "calibrate our bodies as instruments" (Brigstocke and Noorani 2016, p. 2) that could tune in to what was happening and how it felt to play with others during the symposium itself. We also brought our critical analysis to the research materials we made during and after the symposium - images, videos, notes and collective reflections amongst the researchers.

ANALYSIS: WORLDING PLAY - EXAMPLES FROM DESIGN PRACTICE

In this section we explore play moods and their atmospheric qualities by analysing two design experiments made in connection to the symposium Worlding Play.

The symposium sought to explore the intersection of technology, design, learning and play, taking inspiration from the notion of worlding, or specific ways of being-in-the-world made available and apprehensible through, in our case, creative and playful practice. We enacted

this by moving, playing, performing and thinking together with our whole body-minds, and collaboratively reflecting on our experiences throughout the day as we went. In practice, leadership of the activities was shared amongst the different co-convenors, and they passed this responsibility amongst themselves as the group moved from activity to activity. In the examples we discuss here, each was led by a different person, and unfolded in a bodily and imaginative context. In each, different play practices gave rise to distinctive play moods, which emerged as part of the atmosphere of the event, as we will explain.

DESIGN EXPERIMENT 1: PLAY MEMORIES

In the first design experiment, we wanted to work with sliding for devotion, as it is often the way in to designing for play (Skovbjerg, 2020). The repetition, the quiet bodies joining the situation through what they already know about materials, spaces and relations is a good way to lean into a safe space and set possibilities for atmospheres to emerge. We also wanted to link how memory can contribute to the emergence of atmospheres (Sumartojo, 2019) more deeply to the cultural experiences of play practices (Skovbjerg, 2021). In the early afternoon the group of participants entered into a quiet, reflective and memory based activity, led by Lisa Grocott. The prompt was to think of a past play experience that connected somehow to participants' current ways of being in the world, and then to construct a small model of that experience from playmobil people and other materials - card, string, sticky eyeballs, plastic sheets, cotton balls and more.



Figure 1: A Worlding Play participant selects a figure to represent themselves in their play story model.

The first step of Play Memories was for participants to choose a Playmobil figure to represent themselves, and that they could use in a small metaphorical model of their style of play as a child. People chose carefully from a selection laid out on a table (see Figure 1), and gathered construction materials to work with. The room

grew quiet as people started making their models. The choice of figure surfaced a connection to existing cultural knowledge about play. That is, most people were already familiar with Playmobil figures and knew their affordances for imaginative or speculative play. This was not specific to this brand of toy, but rather people brought their existing knowledge of what representative human-like figures can do, because everyone has constructed or played with similar objects in their lives. The connection to well known play practices through materials made the participants lean into the devotion mood through the use of materials and their experiences with the Playmobil figures. The participants could in a quiet and not very expressive way go to the table, choose their figure, and by that action lean into the safe space by drawing on what they already knew, preparing for the play practices to have possibilities. They did not need to show off as individuals, but they had the possibility to imitate very simple actions together, and by that imitation, make the possible path for play practices to happen. The second step was to construct a tableau or metaphorical model of a play memory. As people worked alone on their models, the atmosphere coalesced in the temporary event of people engaged in individual construction play of making the models, choosing the materials, arranging, sticking or piercing them, tying knots or pegging things together. The activity asked people to attune to both a play memory and at the same time to the materials to hand, to bring these two things into conversation - the atmosphere was thus as much a result of individual attunement to the past as it was to the material and spatial specifics of the activity. The attunement to the past play experiences made the participants connect with what they already knew, linking those to the present play practices.

As people played quietly in parallel, recalling and interpreting their play experiences from the past, a sliding practice and devotion mood were evident in the concentrated atmosphere in the room. The task of devoted attention was to bring a childhood experience into the immediate present of adulthood and find ways of relating these two times and mindsets. This play practice was akin to sliding because people worked concentratedly with no attempt to shift the mood, focusing on repetition, moving slowly from one action to the next. The play mood was co-constituted by the individual practices of small gestures and manipulations of the materials, by participants' memories and imaginative capacities, and was heightened by the relatively short time that had been assigned to this activity. It was also conditioned by the reference of the play activity to the past, which required a form of quiet concentration, using materials at hand while sitting.

The third phase took place after around fifteen minutes, once the models had been constructed. In this step, participants paired up and explained their models to each other. This dialogue between people also created a dialogue between the past and the present, between the play memory and the adult ways of being, where participants were invited to reflect on how their memories of play could help surface their particular ways of being in the world.

During this stage, Shanti was able to interrogate some of these explanations, and video the replies, as when Helle Marie explained her creation (Figure 2): “I have always thought about play as this space where I could create the world that I wanted to create...and [in the model] I used different types of materials to create the space [around the figure]. But of course I’m missing somebody, because if I think about my childhood memories, I’m never alone. So there are always people involved in the space, because otherwise I would find it boring”

As Helle Marie explained her play memory, she arranged the string, paper discs and pierced marshmallows in a rough circle around the central figure. She patted the ground around the figure and tapped it up and down as she thoughtfully explained the missing playmates, looking down on her model as she spoke.



Figure 2: Helle Marie’s play memory represented by and narrated through a model using a Playmobil figure.

Helle Marie’s account exemplifies how the play mood shifted in this stage as people started to talk to each other, explain and even act out their models, as displaying play practices emerged. The volume in the room went up as people talked, laughed, demonstrated and asked questions of their partners’ modeled experiences, transforming the atmosphere from one of quiet concentration to animated conversation, showing their models off to others, linking ideas from one play practice to the next. Even if the memories were not always pleasant or untroubled ones, the model-making allowed the maker to playfully reflect on changes and

continuities in their lives, and the activity ended with a lively, engaged and curious feeling imbuing the group.

How can we understand the connection between play practices and the past? Sumartojo (2016) argues that atmospheres are constituted in relation to the past, because our memories of previous experiences are an important part of how we always experience the world. Memory is foundational to worlding, even if these memories are challenged or reframed by new contexts. In this activity, where play memories were a central animator of the play artefacts being made and the play practices of making and sharing them, the reflective, concentrated atmosphere was unsurprising as people cast back to their childhoods and reflected on the implications for themselves in the present. In terms of play moods, atmospheres here help us see how reflective, considered moods like devotion or tension emerge as imaginative realms are accessed and brought into the present play situation.

Moreover, even though the anchor of the activity was a prompt to engage with memories of the past, this was expansive enough to allow the play mood to shift from quiet working on models to animated discussions, gestures and recreations of what they represented. Thus a pairing of play moods with atmospheres can also show us how play moods emerge and change, and how the design elements of sequential instructions, construction materials, and the invitation to share creative insights configure into constantly emerging experiences during one brief play activity.

DESIGN EXPERIMENT II: WATERGUN

In the second design experiment, we wanted to work with exceeding euphoria, as it is of crucial importance for play design, but very difficult to design for (Skovbjerg, 2020). We wanted to explore how special attention to the senses atmospherically and teasing the senses could change the atmospheric possibilities for play practices. We wanted to link the atmospheric point about emergence (Sumartojo, 2019) more deeply to the enactment of play practices (Skovbjerg, 2021).

Watergun was one of the last activities on the day of Worlding Play. Led by play facilitator Roger Manix, the room was set up with one person sitting on a chair, and the rest of the group gathered at the other end of the room. Under the chair was a small toy, and the person sitting in the chair was blindfolded and armed with a watergun (Figure 3). The challenge was for two people from the larger group to sneak up on the person in the chair and try to snatch the toy from under the chair. The sitter’s goal was to defend the toy, by shooting water at the approaching snatchers - if they were hit with the water, they were disqualified from the game. The two snatchers could work together, for example by one

distracting the sitter with noises to draw the squirt of the watergun, while the other one approached from another direction. They could also each devise their own strategy independently, competing with each other to snatch the toy first.

The game, however, was not competitive in the sense that no points were given and there was little stake in who won. However, it was extremely intense for both the players and the audience because of the concentrated sensory engagement with the sounds or air disturbance that accompanied movement, and the possibility of being suddenly squirted with cold water.

For the snatchers, working out a strategy to quietly sneak up and get the toy without speaking, or even necessarily working together, was a physical challenge. For the sitter, they were required to tune in with their non-visual senses to the room and attempt to apprehend where the snatchers were, and how close, and to aim the watergun at them.



Figure 3: A sitter is blindfolded, ready to squirt the approaching snatchers who are trying to grab the toy under his chair.

The group of watchers were not allowed to intervene, and were encouraged to stay as quiet as possible so that the sitter could hear the approach of the snatchers, who also tried to be as silent as possible. The physical challenge alone of trying to remain silent was difficult. This meant that everyone in the room was enrolled in a tense, precarious atmosphere, where the game could change rapidly at any moment.

Over several iterations of this game, the different players experimented with different approaches. Some snatchers worked together to try and fool or distract the sitter. Some went their own way, ignoring the other snatcher, or trying to direct the sitter's water squirts towards the other snatcher. The atmosphere in the room was tense, as the sitter suddenly reacted to the sound of the approaching snatcher, or the snatchers tried new strategies to sneak up on the sitter, moving more slowly or quickly, creeping along the edges of the room, or swiftly approaching before the sitter could aim the water spray accurately. They moved between silent strategies and noisy strategies. In some of the games, the sitter successfully shot one or even both of the snatchers, whereas in others, the toy was successfully snatched and the sitter was defeated.

Interpreted in terms of play mood, the game was characterized by shifting for intensity, as the bodies, movements and practices of the players could shift at any moment, in speed, direction and relation, and the shifting created an unpredictable space. After the game, the sitters reflected on the intensity and even exhaustion of listening intently, knowing they had the attention of everyone else in the room without being able to see anyone else. Displaying practices of the sitter's actions at the centre of attention added to the play mood of tension as the eyes of the others made it possible to judge, be judged and play yourself out in the game. The use of water and the watergun, and that you were suppose to play with water inside also made the exceeding for euphoria possible, and we all experienced the mood fluctuating when water was squirted.

Because of the heightened attunement required of the players and the audience alike, this was a strong contrast to the Play Memories activity, which moved through different play moods. Bringing an atmospheric lens to this event, however, helps to connect the different play moods and the design of the game because it shows how the mood had the potential to change, break or fluctuate at any moment. If atmospheres are always emerging from a given situation or setting, then they help us identify how the play mood always had the possibility of suddenly shifting into either a more tense state as players moved closer or the sitter suddenly shot water, or one of resolution as the snatchers were eliminated from the game, or they reached the toy from under the

sitter's chair. It also helps us attend to how these shifts might be anticipated or designed for from the beginning.

Another important aspect of this game was that the social relations that unfolded during the activity were much more complicated in comparison to the first experiment. The mood of the game was influenced by a lot of people's actions and this diversity meant that the atmospheric shifts were much less predictable. In Play Memories, the players only interacted with one other person at a time, and this primarily dialogic set-up meant that the play mood, although it shifted throughout the different stages, remained relatively stable in each phase. However, in Watergun, the mood felt as if it could change at any moment, and the exceeding for euphoria also gave the participants a sense of the emergence always being about to happen. Indeed, the sitters reported the exhausting intensity of remaining sensorially attuned to their surroundings, combined with a precarious feeling that the toy might be snatched at any moment, and an awareness that they could be observed, but they could not see anyone else in the room.

DISCUSSION AND CONCLUSION: IMPLICATIONS FOR DESIGN PRACTICE

Our analysis of the two design experiments showed that despite their ineffability, atmospheres are a valuable analytical tool. They can help us attune to our surroundings and consider ourselves as emplaced, embodied and subject to the affordances of the environments we inhabit. In discussions of atmospheres, some authors have argued that they cannot be designed (ie Edensor and Sumartojo 2015), despite attempts to do so, because they are not uniform and their effects on people cannot be predicted. However, the concept of play moods can help to define and make sense of atmospheres, and what actions might emerge from them; and atmospheres can help to complicate play moods by highlighting their contingency and the different spatial, material, imaginative and relational elements that participate in them.

Atmospheres also help us see how play moods might change quickly, because they emerge from the specific conditions of play. 'Mood tells you something about your relation to the world or how you are tuned in to the world and to the people around you', writes Karoff (2013: 8). Mood helps to connect your body and feelings to what is happening around you, to find resonances and alignments or discordant moments and potential locations of resistance. Relatedly, atmosphere can help us analyse the different elements that configure together for play moods to emerge - the spatial settings, the rules of any games, the materials, the bodily moves, the sensory affordances of the situation, and the

imagined and remembered experiences that entangle with the here-and-now of the play situation.

In terms of design implications, based on our analysis we suggest three main points.

Firstly, atmosphere helps us see how dynamic play moods can be - they can shift quickly and unexpectedly. Atmospheres suggest that play moods resist stabilisation or completeness. An implication is that when designing for play, we must understand that a moment of play could just as easily be fleeting as it is sustained, prompting the question of the value or possibilities offered by fleeting play moods. For example, a momentary play mood might provide relief on a stressful commute or a shopping trip with a toddler, and play design could attend to these possibilities as much as a longer play mood. Gudiksen & Skovbjerg point to play experiences as having five key ingredients, where experience and surprise is one of them. However, in addition to identifying these experiences, we must also say how the design decisions are made (2020, p. 17) that can influence them. For example, we can design for the fluidity, but the design itself is not necessarily fluid.

Instead, we argue that there has to be some sort of anchor or a transparent 'first action' asking 'what can I do here?' (Skovbjerg & Jørgensen, 2022, in press). This 'first action' has to be very clear, and needs to be designed in a way that we never lose track of it. Understanding atmosphere can help us recognise the importance of this fundamental starting point by associating the anchor with the existing memories of players. This means that the fluidity of play moods can settle temporarily by anchoring them, but not by trying to force them to remain static, but instead designing for a play mood to emerge. This means we can design for the play moods of devotion and intensity – and at the same time create the space for euphoria and tension to happen. This supports Kinch & Højlands' (2013) idea about the middleground, an unfilled space where play practices can emerge.

Our analysis show that devotion and intensity are at least two moods where we can settle in or seek to anchor our actions. Attaching those to individual stories, however, is only one way that play can be anchored for the players. This anchoring can be made transparent, even if it results in very different play stories (and play moods) for different people. For play designers, atmospheres can help us see where you could anchor play activities, for example in the memories, the materials, the spatialities, the sensory affordances, or the other people engaged in the play experiment. This is not to say that all of them should be anchored, because this would mean artificially stabilising or freezing the play mood, potentially stripping out meaning for the players and not taking the qualities of the moods seriously

(Skovbjerg, 2021). Sumartojo and Pink (2019: 101) underline that point when stating: “Here it is not atmosphere that is being designed, but a set of possibilities” .

However, making the anchor points for play visible or transparent gives a way for designers to start to grapple with the complexity of play moods. For example, in the Playmobil exercise, everyone was asked to remember a significant childhood play experience (the anchor) although the play moods that resulted varied for each person. The importance of the anchor is not that it stabilises or overdetermines the potential outcome of the play experience, but that it gives the players an understanding of what is possible within the ‘rules of the game’ and then becomes accessible for the players if they know where the anchor possibilities are.

Second, if atmospheres orient us to emergence, then they can help show how play moods can arise from playful situations, even if those are not in contexts necessarily considered as sites of play, such as the office, on public transport or at the gym. For designers, this means that designing for play is not limited to designing for special settings intended primarily for play, such as the classroom or playground, but rather recognizing that a play mood can characterise any everyday setting.

The design challenge then becomes how we can design to allow play moods to emerge from settings or situations not usually thought of as playful. Or, put differently, how can we design to allow play moods to enliven everyday life and routines? This is valuable because it asks us to look with playful eyes at the possibilities of our everyday lives, and thereby shows how play might be able to generate new experiences, connections, insights or possibilities. It gestures towards play as an animating force that might be able to bring new things into being.

Lastly, atmospheres also help us attend to the multiple elements that configure into the emergence of play moods. This can help designers to identify where and how design can intervene in these elements, and therefore potentially shift or encourage play moods to emerge. Because atmospheres can help us see beyond the play design itself - for example to the materials, spaces, sensations or memories that configure into play situations - it expands where designers can place their interventions and understand their contribution to play moods. Atmospheres can thereby reveal where the ‘blank spaces’(Kinch and Højlund 2013) are in play design, where they should be filled, and where they should be intentionally left blank.

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NOTHING ABOUT US WITHOUT US - THE JOURNEY OF DIGITAL ACCESSIBILITY IN THE MAKING

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ABSTRACT

This exploratory paper aims to discuss and reflect on digital accessibility practices in developing projects and products, focusing mainly on design activities. Digital accessibility is a characteristic of digital products and services like websites that allows people with disabilities to access and use them. Although its relevance, accessibility is not present in many technological objects. When tech practitioners and companies are asked why accessibility is not a priority, several reasons are mentioned, like costs and the available development time. What would lay below the most apparent arguments? What constitutes an organisational culture that leaves factors such as accessibility behind? The reflections developed in this work result from an anthropological study conducted in 2021 in the field sites of Sweden and Brazil.

INTRODUCTION

I have been working as a digital designer for more than twenty years, and for three of these years, I have worked in Sweden. To be more precise, I am a “user experience designer”.

As user experience designers, we are usually proud to be “the user’s advocate”, the practitioner responsible for designing easy-to-use services and products with friendly interfaces and interactions. A good design is visually appealing but also meets real needs, has

substance and depth, and works well and intuitively” (Horton & Quesenbery, 2013). Nevertheless, although the glossy definition, I was surprised that I have never worked in a place that had prioritised accessibility. I was also surprised that I found some hostility against the idea among my peers. Although digital accessibility was not something new, the project showed that the matter was still unknown to many. I heard in an Ethics workshop, “accessibility is kind of old news, no?” However, it looked like many practitioners still had not known what it meant in practice. Was I experiencing a particular situation happening only in the company where I had worked, or was it a broader situation?

Assuming a certain feeling of shame and perplexity, I shared my impressions with a designer quite experienced in the accessibility area. He said he was not surprised because it was a global scenario. Around the world, this number was similar. Only 2,5% of websites were compliant with accessibility guidelines. The numbers proved that the lack of knowledge was still substantial. It was a sign that companies had not taken accessibility as a serious and relevant topic.

What is the design’s role in this matter? Design is not a lonely player in project decisions. Projects are planned in conjunction with other corporate entities, such as business, finance, and technology, in a complex net of roles and goals within a company. Nevertheless, Monteiro (2019) highlights that all design decisions are political. What we design, how we design, what we choose to leave outside, and, more importantly, who is considered the “audience” and the “users” are all political decisions and have impacts (Monteiro, 2019). Technology is never neutral, as well as design.

Design practitioners seek to develop intuitive, easy-to-use interfaces, but who can define what fulfils these categories? Maj and Derda-Nowakowski (2010) describe how the interactions between human beings and computers are an acquired cultural competence. It relies on the user to learn and gain this expertise. This learning curve depends on the user’s context and



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background, and technological object characteristics. If the object's attributes present barriers or inappropriate usability, they will produce "virtual disabilities" by offering faulty interactions to everyone, not only people with disabilities. Design can contribute to the invisibility of people with disabilities.

METHODOLOGY

This exploratory paper results from an anthropological study performed in Sweden and Brazil, which leading field site was a tech company in Stockholm, Sweden. Through ethnographic methods, mainly participatory observation, the study followed an "accessibility implementation project" for almost three months, from October to December 2021. During this period, I observed how the studied company, particularly one of its teams, reacted to new accessibility procedures, the challenges they faced, and how the process of incorporating these new accessibility elements occurred, from not having accessibility presented in the produced artefacts to integrating accessibility as a routine. In addition, the study also counted on the participation of fifteen Brazilian design practitioners through semi-structured interviews. The methods were observant participation, semi-structured interviews, and oral accounts.

DIGITAL DISABILITIES

Around one billion people, or 15% of the world's population, have any impairment. Adding to that, the world is becoming more and more digital. In the last two decades, the proportion of people online in developing countries increased by around 45% (UN The Age of Digital Interdependence, 2018). The increase in digital services varies from country to country, but there are some significant trends. For example, governmental services are growing digitally in many countries. It allows people from all places, like those who live far away from urban centres, to access health services, tax information, and retirement savings. However, when the website or mobile apps have accessibility issues, they can add obstacles to their use. Furthermore, even worst when the service is only accessible through digital means.

Digital technology has the potential to be a great equaliser when it is accessible (UN Disability and Development Report, 2018). According to the United Nations Convention on the Rights of Persons with disabilities, access to information and communication technologies is a human right. Accessibility is ensured by legal rights and laws in many countries as well. Although accessibility is an important topic, has regulations and laws, and its importance is highly acknowledged among many digital and interaction designers, only 2,5% of the most popular websites' home pages are free from accessibility issues, according

to WebAIM. This number indicates a considerable gap between this acknowledgement and the adoption of accessibility practices in the design work.

Geographically speaking, around 80% of people with disabilities live in the Global South (Ginsburg & Rapp 2013). This number is relevant as many large tech companies are found in the Global North and are responsible for creating and developing digital services used around the globe.

In digital realms, the platforms and systems are also built over what is considered "normal" abilities, creating barriers to people with different characteristics. Boellstorff presents how virtuality could offer options to new embodiments but also impose some barriers through the lack of accessibility on devices and interfaces and even creating "virtual disabilities" (2008), a consequence of the inability to perform an action, or the inability of performing it in the most optimised way. Two examples of the "virtual disabilities" that technology may create are small fonts that impose barriers to reading and flashing effects that may provoke seizures. Ginsburg (2012) also highlights how the accessibility of technology may enhance or obstruct one's possibilities to interact and communicate with the world. Technology enhances people when offered adequate resources, but it may "disable" potential users with a range of impairments in vision, hearing, or fine motor coordination due to inequalities in access (Ginsburg, 2012).

DIGITAL EMPOWERMENT

When technology and design are properly prepared for a range of different abilities, it empowers people. Hartblay points out that digital platforms may act as enhancers, allowing people with disabilities to perform actions and express themselves similarly to other people (Hartblay, 2015). One of Hartblay's interviewees, a man in his 30s with a traumatic brain injury acquired in his childhood, described that the moment he could be his true self happened when he was online, and he could have more control over his interactions. The enhancement allowed him to extend himself in digital time and space.

Donald Norman points out that "a major role of new technology should be to make tasks simpler" (Ingold 2012). But Ingold (2012) questions if design - and technology - has failed and, according to him, if it "failed so spectacularly" in its purpose to simplify our lives. On the reverse idea of simplifying our life, he asks if the real goal of the design was to set obstacles for us and challenge our capacity to overcome them. Ingold provokes that "every object of design sets a trap by presenting a problem in the form of what appears to be its solution". Should the designed objects exist to solve problems, or are they here to dictate how people perform their actions? Ingold questions if it is possible

to plan ideal things in a continuously under-construction world, where the forms arise from the engagement of forces and materials within the ongoing process of life (Ingold, 2012). Despite the barriers, Ingold presents some glimpses of hope by affirming that design is about imagining the future, but in an open-ended manner.

The literature on design and disability has also highlighted the fact that designing for a broader and diverse spectrum benefits the whole society. One of the best-known examples is the “curb-cut effect” (Blackwell, 2017). In the decade of 1970, thanks to a movement promoted by disabilities activists, the city of Berkeley (California, USA) started building several curb cuts on the sidewalks. A consequence that nobody predicted: the curb cuts not only benefited people with movement impairments but also others like parents pushing strollers, people pushing heavy carts or luggage, runners, skaters, and cyclists. Blackwell (2017) mentions research that pointed out that nine out of ten “unencumbered people” prefer to use a curb cut when there is one (2017). In digital spheres, technology has the potency to augment the capacity and functions of human bodies. As Hogle (2005) points out, the human body is imperfect, variable, and in a state of constant degeneration and in need of repair, along with the cultural assumptions of what is “deficient” or “normal”. Miller, in his turn, points out how a digital platform can enhance an ageing body whose increased disability affects socialising (2011).

Ginsburg and Rapp (2015) highlight the importance of building new social imaginaries to show the horizons of possibilities for people with disabilities. An accessible future where the inclusion of disability should be not an exceptional act but a regular one. As Ginsburg and Rapp state, resignifying the hegemonic frame requires visionary activism to create an inclusive future vision and rethink disability. Tomás Criado adds the existing calling for anthropology to participate in the materialisation processes of alternative forms of world-making (2020). Anthropology may perform “beyond the text” and in multimodal settings (2020) for opening to a plurality of worlds, in conjunction with the debates on decolonising design.

The visionary activism and new forms of world-making open space for a multitude of disciplines’ intersections. Ventura and Gunn, professors of design anthropology with research on medical products, affirm that the dialogue between anthropology and design benefits the latter, allowing it to gather a broader perspective beyond the techno-practice realms (2017). Jenny Davis underlines that solving design problems in our increasing environment of needs (2020) requires groups of people with skills from several disciplines in addition to skills of collaboration, listening and learning from each other as they solve problems (Davis, 2020).

Davis previously stated that if left unchecked, technology will favour privilege and normality, power and privilege (Davis, 2020). “Left unchecked, producers are likely to make products for users who are just like themselves” (Davis, 2020).

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Adopting a more inclusive design means a change of mindset and habits from the companies and professionals. A change of mindset because, usually, disability is an invisible topic within the companies. As far as one can observe, few employees with disabilities work within the companies. Furthermore, the much-publicised diversity does not embrace disability that much. But not only. When speaking about a change of habits, it is also that tech practitioners can and should adopt accessibility practices as part of their work process. Daniel works in a large company focused on construction materials, and he points out that:

People with disabilities are usually excluded from the process of creating and testing products. It is very common to exclude them, we talk about creating personas, but we never create a persona that needs accessibility. How is the person going to handle it? How a person who only has one arm is going to use it?

One common observation presented in my conversations and interviews was the reference to “bubbles”, that in one way or another we dwell in our “bubbles”, and our perception is affected by it. Bella, a designer from a Brazilian consultant agency, observed:

I think because our society raises people with disabilities separately, so we have schools for deaf children, for autistic children, with Down Syndrome. We don’t see them later in society, or when we do, it’s very rare, it’s very little. If we think that more than 50 million people have disabilities [in Brazil], then we see them very infrequently. So I think the fact that we are not living together with them on a daily basis ends up creating this bubble, like “oh, the number is much smaller than we think”, so it doesn’t have to be a priority to create an application, considering these people.

The term “bubble” in technology was popularised by Eli Pariser (2011). The author defines the bubble as an environment created by engines that cater for the information delivered to people (Pariser, 2011). The filters that create the bubbles are invisible (Pariser, 2011), and people do not choose in which bubble they would dwell (Pariser, 2011). Being a prevalent term in the technology area, it is comprehensive that my interviewees expanded the concept to describe the “filtered” environments they inhabit, spaces that “filtered” and left out the different ones. There are similarities between the bubbles and the assemblages. DeLanda describes that people, as assemblage’s



component parts, are both limited and enabled by the assemblage (2006). Both bubbles and assemblages tend to have borders. The more cohesive, the more they reinforce their own territory. They are limited by their component parts in some aspects, and they enable other potentialities by symbiosis.

The perception that we, as designers, dwell in a “bubble” is present in some of the experiences reported by Swedish and Brazilian practitioners. In the company I investigated, Ryan also observed that he lacked this type of education at college, and the feeling of exclusion pervades his experience. “We never got exposed, never were able to understand, we never built empathy”.

The unrest feeling experienced when the accessibility project started in the researched company is not a unique situation. In several conversations, similar situations were experienced by other practitioners, in other places. Accessibility requirements are often not prioritised for a series of excuses such as time and cost. Sometimes, these requirements are left aside until laws and fines emerge. Some Brazilian interviewees illustrated the situation by quoting a rhyme in Portuguese: “se não aprende pelo amor, aprende pela dor” (if you do not learn through love, learn through pain), meaning that if the corporate culture cannot change due to humanitarian reasons, it needs to change due to legal reasons.

Behind the excuses, other factors could be observed. The scenarios in Sweden and Brazil are different, with distinct historical backgrounds, but in both, it was possible to perceive the absence of people with disabilities working within organisations. This realisation can be extended to the absence of people with disabilities in many social structures, not only in business companies. The lack of diversity, or the absence of what is considered the “other”, is not a problem exclusive to the technology and design fields. It reflects a social issue present in several other sectors.

Design and technology reflect the society in which they are inserted, but they can also shape and provide a more inclusive living. The interaction and cooperation with a broader diversity of experiences could assist in understanding how disability worlds are made. It is possible to learn and build new worlds and futures through these relations. As Escobar points out, “design is about creating cultural meanings and practices, about designing culture, experience, and particular ways of living” (Escobar, 2018), and people with disabilities should participate in the process of designing the world to make one that includes them too. When social institutions and organisations are built on presumed access, the impacts for those without access are amplified exponentially (Davis, 2020). It is more than time to realise that the structures and mechanisms that produce digital disabilities create more than barriers on apps or websites. It creates digital inequalities (Davis,

2020), and nowadays, these limitations do not restrict or act only on the digital spheres but can affect the whole social existence of people with disabilities. As design practitioners, we should reflect on going from a space unintentionally left blank and moving to a space **intentionally** left blank that should be occupied by the proper actors.

The DRM's [disability rights movement] demand for control is the essential theme that runs through all its work, regardless of political-economic or cultural differences. Control has universal appeal for DRM activists because the needs of people with disabilities and the potential for meeting these needs are everywhere conditioned by a dependency born of powerlessness, poverty, degradation, and institutionalization. This dependency, saturated with paternalism, begins with the onset of disability and continues until death. The condition of dependency is presently typical for hundreds of millions of people throughout the world. (Charlton, 1998)

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MOVING BY DOING: GAINING SIGHT OF AND GRASPING MOVEMENT

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ABSTRACT

Although physical activity plays an important role in our lives, it has mainly been addressed from a health perspective. Our research explores a partly blank space by making visible movements present in alternative contexts, in our case - the context of designing and crafting with reclaimed materials. Our research contributes to finding and making visible movements that otherwise go unnoticed and to seeing how they can support to expand the notion of what physical activity is and where it can be found. As part of our result, we propose an explorative method directed to the design research community when in the phase of analyzing and making visible movement in empirical data.

INTRODUCTION

Movement is a fundamental part of life and performed for a myriad of reasons, sometimes conscious and sometimes unconscious (Slotte, et al., 2017; Engel, 2008). Because of its ubiquitous nature, it may be difficult to verbalize and be consciously aware of it outside of a given context where words to discuss movements are known (Studd & Cox, 2019).

In many situations where movements are discussed, there is pre-given structure or language to use when discussing what it means to move and how movements should be performed in that specific context. Movement is measured, judged and may end up as a representation or function of something else than the movement itself (Larsson & Quennerstedt, 2012).

The efforts that have been made to promote and define physical activity have failed to recognize the multifaceted nature of physical activity, reducing it to an activity of energy expenditure and preventing of diseases, without considering the contextual, social and behavioural aspects of physical activity and how it connects to our everyday life experiences (Silva, et al., 2017).

In this paper we share our search for alternative ways and contexts to find, analyse and discuss movement in action. We have selected a context where movement is not explicitly discussed but plays a pivotal role, both as a means to an end but also as part of the experience itself. We turned to analogous practices of repurposing and appropriating of reclaimed materials. Since reclaimed materials often needs to be adjusted and reshaped before it can be used, it provides several opportunities to study movement in action. Our research aims at exploring a gap or a partly blank space by focusing on highlighting movements that usually go unnoticed. Movements that are hidden, out of sight or too mundane to become visible. In search of the unnoticed movement, could finding and making it visible contribute to expanding how movement is analyzed, discussed and framed within design research?

We will mainly use the term movement in this paper. We trace, relate and adhere movement to physical activity but also to the concept of physical literacy and perspectives of movement as discussed within mime corporeal as a way of telling stories.

We will start by sharing our theoretical lense for analysis, followed by the description of our case study participants and their processes of making. To support the analysis of our empirical data, we describe how we make use of our own movement capacity to (de)familiarize and grasp the hidden stories of movement. Finally, we discuss how the use of movement could play a role in supporting designers in their analysis of data as well as making visible the yet unknown movement.



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BACKGROUND

This case-study is presenting design research situated in practice and moves freely between approaches in physical literacy, somaesthetics and mime corporeal. All three have been discussed in relation to phenomenology (Edwards et al., 2017; Rynänen, 2021; and Haagenen, 2014) although somaesthetics is mainly rooted in pragmatism (pragmatist philosophy) where knowing the world is inseparable from agency within it and Mime Corporeal originates from performing arts as a method to augment competence in movement and performative expressions.

Sheets-Johnstone (2011) describes the phenomenological process as making the familiar strange, the wonder of being and aliveness rooted in movement. In the challenge of making the familiar strange lies also a challenge of words or language – as we do not have words that directly can describe the present. The experience of what is present may have to wait – to resonate or bounce around for a while – and allow us to return to it in order to pinpoint or see aspects and find words that can communicate that experience (Sheets-Johnstone, 2017).

With a phenomenological approach to exploring movement - we are aiming at grasping movement to enhance our understanding of movement. We revisit the past to find ways to discuss and learn from the movements somewhat hidden in settings and activities that do not explicit focus on the movement as such. Smith and Lloyd (2021) advocate playfulness in the search for ways of writing about movements in a phenomenological based inquiry.

PHYSICAL LITERACY

Physical literacy is a holistic approach that brings together affective, cognitive, physical and behavioural aspects of physical activity. While literature on physical activity mainly has revolved around the use of motor skills and energy expenditure, physical literacy provides a more holistic perspective on physical activity (Whitehead, 2010).

The embedded capacity of the embodied actions is at the core of physical literacy (Whitehead, 2010) – how we negotiate, get experience and learn to incorporate and develop a dialogue between our capacities, abilities, the material and the context in which the activity takes place (Moran, 2002). The concept, although strongly related to physical activity and physical education (Roetert, Ellenbecker, & Kriellaars, 2018) has in recent years moved towards city-planning, sustainability and education beyond physical activity (O’Sullivan, et al., 2020; Pot, et al., 2018). The enhancement of physical literacy argues for a space and structure of patience and openness that allows for the unpredictable to take place

(page 16) in Schaeffer et al. (2022). In this case-study we use the concept of physical literacy as an approach to nurture the discussion of movement entangled in a context where movement is not in focus.

MIME CORPOREAL

Etienne Decroux was a French actor and choreographer dedicated to exploring the potential of movements in theatre. Decroux worked during several decades developing *corporeal mime* (Decroux, 1994). In his teaching Decroux developed several concepts. One of them, *chok-resonance* is part of nine different corporeal competences that Decroux found of great importance as skills when acting through body-movement (Alaniz, 2013). The chok-resonance is what happens when one performs an active movement (a chok) using a part of the body. This movement meets another part of the body and produces a consequence (a resonance) it refers to a dialogue within the boundaries of a body, a cause-effect, an interplay, a rhythm of movements as in action and counterweight (Camilleri, 2008). We use mime corporeal to inspire our own process of describing the movements found in our participants’ processes of making. We move between describing movement in biomechanical and poetic ways, trying to uncover the hidden narratives.

SOMAESTHETICS

Shusterman introduced somaesthetics in the mid-1990ties as the *critical study and meliorative cultivation of the experience and use of the living body (or soma) as the site of sensory appreciation (aesthetics) and performative and creative self-fashioning*. It has grown to both a discursive theory and as an embodied practice supporting knowledge of the body and lived somatic experience and performance. It acknowledges that sensorimotor is an active dimension of perception (Shusterman, 2020).

Somaesthetics is well known and used within human computer interaction and interaction design. A field of exploration called Soma Design has been initiated by Höök (Höök, et al., 2018) and used in research, among others, by Tsaknaki, et al. (2021) and Cioffi Felice, et al. (2021). In our case study, somaesthetics helps us pay attention to our participants’ somaesthetic explorations and the use of their bodies in their processes of making.

RELATED WORK

The conventional way of scrutinizing movement is through testing, measuring and evaluating movement, which reduces movement to representations or functions e.g. fitness levels and motor ability, that go beyond the movement itself (Larsson & Quennerstedt, 2012). A sociocultural approach to understanding movement



(Larsson & Quennerstedt, 2012) points to the importance of contextualizing movement, as well as going beyond the pre-given settings and standards to get hold of what it means to move.

There are different examples of tools for representing and working with movement within the community of design such as: visualisations (Hansen & Morrison, 2014), a set of guiding principles for movement-based interaction (Hummels, Overbeeke, & Klooster, 2007) and a design methodology for movement-based design that aims at defamiliarizing our habitual ways of thinking and perceiving (Loke & Robertson, 2013). Svanæs & Barkhuus (2020) present a matrix for providing support for movement-based design using *tense* (past, present and future) and *point-of-view* (first, second and third person). In our analyses we make use of their point-of-view and tense.

METHOD AND ANALYSIS

In search for movements in a context outside of sport, physical education, dance or performing arts we approached an education in recycle design at ReTuna, in Eskilstuna, Sweden. ReTuna is a mall for second hand items or items re-made of recycled materials. It is also the studio for an educational program in how to make use of recycled materials. At the end of the education there is an individual assignment, a design-project during five weeks and we were invited to develop the design-brief.

An unfinished Tiny house that previously had been part of a museum exhibition (Schaeffer, et al., 2022) which the authors had been part of building was provided to the participants as a design-space for their explorations. The theme for the design-brief focused on: What did the notion of home and the question “What is it to dwell to you?” evoke in them? Their task was to interpret this theme and to design objects for the interior. The selection of ReTuna recycle design education as the focus for this research is related to the case at the museum (Schaeffer, et al., 2022) where one of the insights was that working with reclaimed material provides challenges – as an ongoing negotiation of territories between the maker and the material where a variety of actions and movements are involved.

Out of eleven participants (students) –female and non-binary identities in ages between early 20ties to late 60ties – five cases will here be presented and discussed.

We were on site at the studio at ReTuna in Eskilstuna two days every week. Methods used for generating data were observation, semi-structured interviews, photos, video, field notes and design probes. Contextual semi-structured interviews were performed with all the participants, focusing on their experiences of interacting with different types of reclaimed materials and tools.

The participants were also handed a probe with different tasks and a photo elicitation inspired diary to document their processes and give individual space for reflections on the theme and the process. The probes were collected at the end of the project.

During the initial phase of analysing the rich generated data, we struggled to access the experiential qualities and movement from their descriptions of their processes. The participants would describe what they did to the material, not how they involved their bodies, nor the movements involved in the making. Even though we had encouraged participants to record their movements and experiences of these movements, most often we would get descriptions that it felt good and that they were happy with how the result turned out. Traces of work as soar muscle or muscle fatigue and challenges with handling materials were described – but from the written empirical data – there were no clear traces of movement to the extent that we could get sight of it or grasp it. Looking at the video material, we also struggled to “see” anything of interest, nothing really “caught our eyes” when it came to movement performed by the participants while engaged in different stages of their processes of design.



Figure 1 The big ball that was used to mimic data

To break out of this vacuum we started re-enacting and exaggerating participants' movements and used a big ball (see Figure 1) created by one of the researchers for this purpose. We pasted printed strips of the generated data such as citations, descriptions of themes and activities of their processes, on the ball. We then set the ball rolling and when it stopped, we started to mimic and act out the associated movement of the clip that happened to be on top of the ball. Observing each other, the movements rather directly “came to life” and some movements, as we would exaggerate and repeat them, started resembling movements present in sport activities. This gave energy to the analysing process, to through associated movements performed by our own bodies, get sight of movement that seemed hidden. Using our own movement abilities and the sports as a metaphor to (de)familiarise with the participants' movements, we managed to extract narratives of movement from the generated data.

Encouraged and supported by mime, somaesthetics and physical literacy, that all three emphasize the lived body as a source for exploration and using part of the analytical framework of Svanæs and Barkhuus (2020)

we went through each case with a renewed sight for movements and discovered more movements that previously were hidden from us in the same data using this explorative method. We made use of first-person perspective to make the second- and third-person perspective come alive, moving between the present (observing the movement through video recordings and our own bodies) and the past (accessing memories of participants' movements and our own experiences of building) see Table 1. Through exaggerated re-enactments we were able to detach the original movement from its context and user and access the 3rd person perspective. The process for analysis through movement and observation was performed for all five cases.

Table 1: Different point-of-views and tense.

Point-of-view	Analysis process
1st-Me	Accessing memories of how it felt for us to participate in building activities in the past. Awareness of how it feels for us to re-enact participants' movements.
2nd-You	Empathically observing movement of our participants in action and through video recordings, photos and their descriptions during interview. Empathically observing each other re-enacting participants' movements.
3rd – He/She/They	(Analytically) observing each other re-enacting participants' movements through exaggeration.

Here we share the stories from the five selected participants' processes, our descriptions of the movements involved, the participants reflection of the theme, their process of making and our analysis.

FREEDOM THROUGH WEAVING AND SAILING

“Freedom - I want my home to be a place where I can feel free and safe to be who I am and do what I want. A place to refuel and dream away for a while.”

This participant decided to weave a hammock to represent her theme of floating and being free. We followed her in the process of assembling the loom, preparing the material and weaving her final design. For assembling the loom, she described how she needed to concentrate and keep an eye on her hands while keeping in mind all the steps of the assembling process. She also needed someone to join in as more hands were required to pull the warp through the loom. One person had to hold on to the warp at one end and follow along as the

other winded the warp with the ratchet wheel at the other end, see Figure 2.



Figure 2 One is holding the warp (to the left); The other is winding the warp (to the right)

Tying and spreading of the warp threads evenly was crucial for the result and to be able to discern small differences in the unevenness of the threads, a lot of experience in the hands was required see Figure 3.

At some point she needed to climb into the loom. The situation left her with a very strong negative experience of mis-fit with her body having to perform several movements in a space and having problem of reaching the goal. *“...it is cramped, and difficult to reach all parts, difficult to stretch the body, not a fun working position”*

Meanwhile, the participant continued her process by preparing rags for weaving and decided to use jeans that had been donated to the studio. She tried different methods of cutting the jeans into small strips but decided to go with the scissors. *“I found it easier on my hand - I kind of get closer to the material when cutting”*

We noticed a difference in force and size of the movements during the different stages of the transformation of the material. First, small careful movements were performed when cutting and rolling the strips, which then were transformed to a forceful and heavy-handed beating on the material with the loom beater.

WEAVING

After several days' challenges of preparation, she finally began to weave, something that she had been looking forward to. A repetitive rhythm of activity and rest set in and the movements became more monotonous compared to when she was crawling in and out of the loom. It was a rhythm, an interplay or an interaction between engaging the muscles in force and relaxation – to letting go of the tension. Weaving engaged actively her both hands and feet in the process, with dedicated actions performed by her fingertips and toes. The core seated on the weaving chair had the task of maintaining and mediating balance.

The hands supported each other – feeding the rag in and out, twisting and handing over the material to each other, and pulling the beater together towards her.





Figure 3 Feeling the tension of warp threads (to the left); Barefoot weaving (to the right)

After a while she decided to take off her shoes. “I get a better feeling and find the treadles easier.” Observing the feet, we saw how she pinched her toes of the left foot around one of the beams to provide support for the depressing movements of pushing down the treadles with the right foot see Figure 3. The right foot shifted from treadle 1 to 4 and found its way directly between the treadles with balanced speed and precision. The same movements were repeated in a rhythmic pattern: pushing down a treadle, shuttle through the shed, beat, change treadle, beat and over again. The pattern was paused when the rag ran out or when the warp needed to be pulled forward. Slowly, as the participant got familiarised with the rhythm of the movement pattern, the weave started growing in length.

ANALYSIS AND REFLECTION

When acting out and exaggerating some of the movements from this participant’s process, in dialog between the one acting out the movements and the one acting as a spectator, we noticed that certain movements reminded us of sailing. This connecting provided us with a language that we continued to discuss in relation to this specific participant.

The cranking of the rope in sailing resembles the movement she performs to wind the jeans stripes on to the shuttle or when winding the warp. The activity of pulling the warp through where one is cranking and the other holding, reminds us of the collaborative activity of raising a sail. In the activities of weaving, as in sailing, the hands and feet continuously work in a dynamic exchange of balance with the loom or the boat.

Other metaphorical similarities are all the preparatory work involved before one can start sailing or weaving and a multitude of diverse movements involved in the preparation. Added to that, you need to have the equipment and the knowledge before going on a sailing trip or setting up a loom. The constant adjustments of tension of the sails bears similarity to tightening of the warp threads and adjusting the warp as time goes by to be able to continue moving forward. Here, too, it helps in certain moments to team up with others. They work in duo with pulling and yielding. Tension, almost a tug of war - they experience each other's movements and muscles force through the material. With a steady wind,

a calmness emerges, and a rhythm sets in where one can just sit down and weave, or sail for a while.

ART IN CONSTANT CHANGE - SMASHING PORCELAIN AND IN BADMINTON

“A home is something changeable, nothing is the same from day to day, things are moved, changed, they break and get repaired. I draw parallels to the ocean. No clam, no wave or seal stay at the same place, they are in constant movement.”

This participant made a mosaic seal to represent her theme. Using different porcelain pieces, the participant talked about the invisible history of the material: “There are hundreds of small porcelain pieces that come from different places that have come together, from different homes, that carry different stories, and traces of different food that has been eaten on the plates.”

She told us about the process of preparing the materials needed. She searched for porcelain items in the area allocated for the studio to collect reclaimed materials and items. “...you can't know what materials will come in... it's a process of waiting, searching and seeking”

After collecting and gathering some porcelain items, followed a process of getting the items down to a size and shape that she could make use of in her design. She didn’t want too big but not too small pieces; a mix was good. “if the pieces are too big, it will be more difficult to get them to fit together. Especially since my image that I have made is quite detailed.”

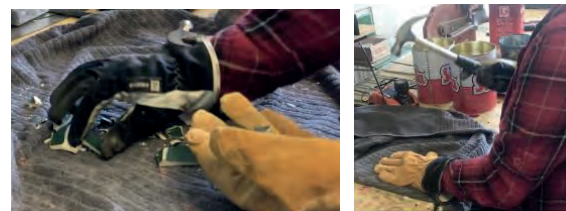


Figure 4 Smashing with the hammer: nothing bounces back but the surface underneath the towel changes (to the left); Picking up small porcelain pieces while wearing protective gloves (to the right)

The process of crushing the porcelain started with placing the items, one by one, on the wooden table, under a towel and then smashing it repeatedly with a hammer, see Figure 4. After smashing with the hammer, she put her hand on the towel and smoothly stroked it around. She later explained that she wanted to feel the broken porcelain through the towel to get a sense of the size and if there were any irregularities of the broken pieces as she wanted smaller, flat pieces.

It wasn’t until she was content with the feeling of the pieces under the towel that she unfolded the towel to do a visual clarification to see if the pieces were the size and shape, she wanted. This process was repeated



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several times. *"If there were any large pieces that I could feel, I didn't have to lift up (the towel), but you could feel with your hand if there was something"*

The movements of beating with the hammer were precise and forceful. She explained that it was liberating to smash the hammer, as this was normally something you weren't supposed to do.

She proceeded by picking up the pieces that were at good size and leaving others to continue to divide them into smaller pieces. Wearing protective gloves, it was quite tricky to get hold of and remove the small pieces from the towel, see Figure 4. When she had enough of pieces, she moved on to placing them in a pattern on a platform of wood. It was a puzzle, where she twisted and turned the different pieces to get them to fit together. Still some pieces needed adjustment and she used both hands to generate the force needed to cut the pieces with the pliers.

ANALYSIS AND REFLECTIONS

Examining this participant's process through our movement inclusive method, the one observing sees a determined calmness and patience present in several of the steps: in the waiting, seeking and finding of the right porcelain items to be used, to the step of putting them together into a pattern. In contrast, when mimicking the smashing-with-the-hammer movement, we notice an explosive, almost angry feeling in our bodies. From the video recordings, we see several examples of how she uses her body in her process e.g. the hand is used to "see" and determine whether to continue smashing with the hammer or to stop.

The movement of smashing with the hammer made us, when re-enacted and exaggerating the movement, think of smashing with a badminton racket or a goalkeeper directing the ball away from the goal, a controlled, precise yet forceful movement. And in between smashing, more light-feathered movements are present.

GETTING TO KNOW THE MATERIAL - HAMMER THROW – HOME ON THE RUN

"I have been thinking about the involuntary nomads, those who have to escape war and climate catastrophes. I thought of a felted cocoon that you can hang up in a tree at night and sleep in. You can crawl into the cocoon, which is like a womb, and then you feel safe."

This participant described how she intended to make a cocoon out of wool as her theme was safety, but how she changed her theme to the false sense of security due to having difficulties of felting it properly.

The participant explained that she didn't have a lot of experience working with wool, and that it was different from the material she was used to work with, the clay.

"I am not certain about the material, I don't know the material, I know the clay, but I have not got to know the material yet. You have to get to know the material"

WASHING, SLINGING AND TEASING

The wool that she used was a kind of wool that generally gets thrown away due to it containing a lot of leaves, small pieces of wood and dirt. She described it as if *"time is shrinking"* referring to the time-consuming process of preparing it for use.



Figure 5 Washing the wool

The process of washing the wool began by placing the wool in a tub filled with water. She spread her fingers to make her hands as big as possible and used them to press down and flatten the wool in repetitive small up-and-down movements to allow the water to filter through and get the dirt out, see Figure 5.

To speed up the drying process the participant centrifuged the wool by hand outside. She started by laying out a thin semi-permeable cloth and placing a pile of rinsed wool at the center of it. She then folded the cloth, grasped the corners, leaving the wool hanging down as if it was in a bag and started swinging clockwise with one arm extended at full length until she picked up a speed (see Figure 6). Reversing the direction of the swinging made the water separate from the wool and land on the grass. She repeated these sections of movements several times until she noticed, or rather heard that the water had come out. *"When I do this (change the swing direction) I hear the water hitting the ground a little - but it's quite approximate"*

It was an intensive movement, where the whole body was involved in providing a counterweight to keep the balance while the stretched arm was performing the quick swinging movement. After hand-centrifuging the wool, she moved inside, placed the wool in wire baskets and took a seat in front of it. It contained a myriad of wool tangles in different colours which she took up one by one and started pulling apart.

This was a battle of force between her and the material where she held the material in one hand while the other stretched it apart until it detached from the main pieces (see Figure 6). Sometimes the material was too hard to handle - the knot couldn't be pulled apart - she needed to give in. She moved on, picked up another piece and continued.





Figure 6 Centrifuging the wool by hand (to the left); Pulling the wool apart (to the right)

ANALYSIS AND REFLECTIONS

Preparing the wool is a process of several steps that involve transitions between different movements, places and actions. A variety of movements both in size, force and endurance are present, at the same time as the movements of each step are repetitive and monotonous. When playing out parts of this participants process, we saw a clear resemblance of hammer throw, apart from that both arms are used to swing the hammer to generate the momentum. Using the notions of chock-resonance from Decroux – when she changes the direction of swinging (chock), it creates a resonance causing her thighs to stiffen and her posture to sway.

In the repetitive up-and-down movement when washing the wool, through our re-enactment we see similarities of dribbling a basketball. And the battle with teasing made can resemble a mini tug-a-war where sometimes one loses, sometimes one wins.

DYEING, CLIMBING AND NOT LETTING GO OF THE GRIP

This participant decided to design a sun to represent her relationships and what dwelling means to her. She described how she wanted to “...represent warmth and safety in her relationships through a designed collage of different, yellow-coloured pieces”

She used the technique of natural dyeing in her project because plant dye was something that really had caught her interest. She shared that she also used it as a technique to cover the sometimes-visible history of the reclaimed material. *“Many of the sheets that I had, I have washed them, but they were stained, but as long as you dye them again, it won't show, then it won't be disgusting anymore.”* She used onion skins, turmeric and birch leaves to make different nuances of yellow. She described how she went for a walk in the forest to pick birch leaves and how much she enjoyed doing this as part of her educational task.

Following the participant in the studio, we noticed that there were different processes that started at different times, in parallel or sequential sessions. For example, preparing a dyeing bath required waiting for the colour to extract. The waiting time depends on which material

was used. *“Unlike turmeric, it takes long time to dye with birch leaves.”*

Meanwhile, she prepared the fabric sheet, which was previously washed and ironed. To remove the edges of the sheet, a small cut was made with the scissors. Then she grabbed the two ends with her hands and tore the sheet apart by pulling it (see Figure 7) to each side as far as she could until her arms were fully stretched.



Figure 7 Tearing the sheet apart (to the left); Squeezing water out of the cloth (to the right)

Tearing the sheets was movement intense activity and it produced a loud cracking sound. She did about 3.5 full pull-a-part movements before she needed to cut with scissors to continue. Once the edges were removed, she moved on to cutting the large piece of sheet into smaller pieces, repeating the same pattern: cutting an incision and then pulling apart with her arms. After completing this step, she folded the fabric and tied it according to the pattern she was going to make, and finally, she left it in the dyeing bath overnight.

In the morning, the cloth knots were rinsed one by one, and the water was rhythmically squeezed out of the cloth (Figure 7). Squeezing included many different grips. She grabbed the knot in different ways and constantly moved her hands for new grips. She needed to press, squeeze and twist to get the colour out. When she had rinsed and squeezed each knot a few times, it was time to see the result of the colouring. She explained that seeing the result was very exciting because it wasn't possible to predict exactly how the result would turn out due to variations in the dyeing material, the pattern, and the quality of the fabric.

“So how can you think this is so much fun. You go like this: ah!” she exclaimed, cutting the last threads that held the cloth knot together. During silence, she held it in her left hand, while rolling it out by extending the right hand up towards the ceiling. She held up the fabric in front of her for a while to get familiar with the material transformed by the dyeing process. To be able to look through the whole piece, she rotated it by letting go of one end with one hand and grabbing another.

Going through many different activities and movements the project of creating the patchwork – the sun – evolved. Some of the steps were familiar to this participant beforehand – and it showed in the way these activities were performed – in the phase and rhythm of the movement. She described the project-work as

exhausting and how it left traces in and on body in the form of pain and fatigue.

ANALYSIS AND REFLECTIONS

Unlike the ready-made materials bought in the stores, the reclaimed materials require a different approach and have a different timeline which is visible in this participant's processes where much of the work evolves around preparing the fabric for the final patchwork. It is an active waiting, collecting, redoing, adapting, embodied thinking etc. The challenge is to use a variety of movement through different techniques and tools to transform the material to fit the purpose. Discussing and mimicking this participant's movements, it reminds us of sports-climbing where each rock or cliff is unique in its shape and quality and needs to be addressed accordingly – like her fabrics. As she moves her hands from corner to corner of the cloths without letting go of the grip – we draw similarities to securing in sports climbing where one never completely let go of the grip, keeping at least one hand on the rope while changing the position. Working intensively with her arms: tearing, stretching and reaching out when interacting with the material resembles the movement in climbing. Not being able to completely predict how the fabrics will evolve in the transformation process – in a similar way, the rock evolves by just being and acting in the present moment at the present level of the rock. There are different rhythms of movements in the preparation each piece of fabric, just as in climbing where the preparatory work of security gear and each move involves different rhythms of movements.

LOFT, PARCOUR & PRACTITIONERS' DANCE

A (hidden) place where you can be undisturbed while still keeping an eye on the surroundings. *"This is a childhood dream come true to be able to paint with different types of colours and not pay attention to lines. It felt so good and liberating to be able to go beyond boundaries and just be free and enjoy the colours."*

This participant decided to construct a loft. The theme and context gave her the opportunity, a second chance to explore building and painting driven by desire and ideas that didn't need to adjust to norms and standards involved in construction. She also reflected on the norms of who is holding the tools and giving advice. She shared a memory she had carried from her childhood when she and her sister wanted to just go ahead and build something. They were interrupted by their father *"...then dad came and said no, now it must be straight"* She also shared a situation that happened while she was working on the loft. A man entered the tiny house and started giving her advice on the construction she had made *"... that was a strong*

reminder that the world out there is not so permissive like it is in here. And that makes me sad."

BUILDING THE LOFT

"My project started down on the floor and continued to move up, so now I'm up here" This participant made a gradual shift of her location and position in the physical space and because of that, the size of her movements - what she could do and how she could move, changed. While she could prepare the material, saw the planks, move around on the ground, as she continued to move up, the movements got more restricted and cramped due to the small space of the loft. In some postures or positions almost, her entire body was jammed from above and below and there was little room or space for movements. She needed to figure out how to position herself to proceed working. Holding up the tools while laying on her back, lying in a sideways position, sitting with her head tilted on the side, leaving the legs hanging outside of the loft are few examples the positions that she choreographed.

She also lost the stable base of her feet and force that could be generated from them as a support in performing different actions. Instead, she used different parts of her body such as her back, her butt, part of her side as the base for generating the counter pressure needed to support her actions of screwing, hammering, putting up the ceiling, painting and other activities included in her construction. We got a hint of traces of her movements on the loft by looking at her hair after she painted the ceiling see Figure 8.



Figure 8 Two practitioners collaborating on the loft (to the left); Traces of paint reveals participant's movements (to the right)

Other traces of her relation or encounter with the material is seen as bruises, dirty hands or dirty water in the basin when washing her hands and clothes at the end of the day.

PRACTITIONERS' CHEEK-TO-CHEEK DANCING

Sometimes they were two persons working on the loft – as help was needed. They collaborated in figuring out how to move and act in relation to the space but also in relation to each other - like collaboration in a dance - a dance on the loft instead of a dance on the dancefloor.



They worked in synergy, one was on the loft and the other balancing on a ladder next to it, helping by holding up and pushing, but also acting as guiding “eyes” monitoring the movement during certain situations as the one carrying through the action with the tool was not able to see where she was aiming.

At one point they both needed to be on the loft to be able to put up the last wood board. To fit in the tight space, one had to lay down moving the wood board from her feet up and over her head, and hand it over to the other person, cramped in the corner, to push it into place see Figure 8.

ANALYSIS AND REFLECTIONS

In this participant’s process we noticed how the becoming structure of the loft and the material not only served as design purpose but also as means, a tool for moving around and grounding herself in the unstable space above the ground. Watching her move around, we see many examples of how the loft forced and challenged her to figure out and 'choreograph' alternative ways of moving compared to her ingrained or accustomed movement patterns or repertoire used while working on the ground.

When playing out this project we saw resemblance of couples dancing in the actions when her helper teamed up and co-moved on the loft, embracing each other and the available space. Although a relay race rarely is performed in a cramped area such as this loft, the timing of handling tools and materials between the two working on the loft, make us associate those actions with the handling over a baton in a relay race, a smooth but precisely choreographed action.

DISCUSSION AND CONCLUSION

We have shared experiences from a five-week case study exploring movements that the participants performed when working with recycled materials and interior design. Our aim is to bring the often neglected or taken for granted (and therefore invisible) movements and make them visible to further discuss and contribute to understanding of how movement may be described and examined in design research.

Exploring and researching movements in situations where they are not the primary focus of action in the context has been both challenging and rewarding. We generated data through observation, semi-structured interviews, photos, video, field notes and design probes. Although we had lots of material, our efforts to analyze and extract the movement out of our data unfolded the difficulties in taking on such a task.

We describe and discuss movements in the five cases at the backdrop of physical literacy, mime corporeal and somaesthetics. We present a first version of a method

adopted from the analytical framework of Svanaes and Barkhuus that makes use of different points-of-views and tense. We used our own movement ability as a creative resource for generating insights by revisiting the 2nd person perspective and gaining a 3rd person perspective of the generated data. The inspiration derives likewise from Hummels, et al. (2017) and *Move to get moved*– to evoke empathy and preserve sharpness of the gaze.

Within physical literacy, Smith & Lloyd (2021) argue that a playful approach may support the ability to grasp perspectives of movement. This approach inspired our mime activity where we exaggerated the movements found in the data (the re-enactments) which allowed us to zoom in on them and make them visible. Besides generating insights, it gave us energy to continue the process of analysis. This can be related to notion of chock-resonance from Decroux (1994) in that the re-enactments that we performed through mime resulted in a resonance in our own bodily experiences that supported our ability to verbalize the experience. Finally, somaesthetics has inspired us to continue explore movement within the design research domain.

Why did we see sports when re-enacting and exaggerating the generated data from the case study? We discussed this vividly and critically. One reflection is that this might be related to our own socio-cultural context where sports have a solid and accepted place in society and are something that many may have direct experience of or through different kinds of media.

We discuss that lived experience, as central concept within phenomenology, embrace movements in its full complexity and variations and that movement in interaction with recycled materials has a story to tell and can be considered as physical activity, although hidden or hard to articulate.

Finally, we suggest that researcher use their own movement capacity when analyzing (getting to know) generated data as a mean to facilitate the search – to defamiliarize with the data to get the grip of and grasp - perspectives of movements and how the movement-stories can be communicated.

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Imaginaries] — [Materiality

CITIZEN-DESIGNERS MAKING WORLDS IN HEALTHCARE: A REFLECTIVE READING OF ANNA LOWENHAUPT TSING'S *THE MUSHROOM AT THE END OF THE WORLD*

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ABSTRACT

Design in health and care has rapidly expanded into service experiences, digital, and all things patient-centered. As healthcare designers, with curiosities and concerns about the future, we open up our evolving questions of care for designers, educators, and citizens. The book *The Mushroom at the End of the World* by Anna Lowenhaupt Tsing offers respite and reframe with its critical examination of the ruins and fringes of capitalism and learnings about ecosystems and relational concepts required for a liveable future. The metaphor of precious mushrooms that thrive in the ruins of a forest sparks our interest in alternative design narratives – complex, collective, diverse, intangible – to explore the fictions and frictions of healthcare and our conversations about design that

cares. What is care that lives on the fringes of predictability, scale, efficiency, and profit? This paper offers our inquiries structured around four questions, or entanglements as inspired by Tsing.

INTRODUCTION

A lot is at stake in the worlds of health and care. The cruel pandemic laid bare the strengths and weaknesses of care when health is at a tipping point. Forces of digitalization, data, and market opportunity apply pressure to our experiences of healthcare. Design rapidly expands collaborations for service experiences, digital solutions, and strategies named patient-centered. Yet the business of healthcare all too often leaves design contributing to non-caring results, neglecting and erasing a wider range of care dimensions that Puig de la Bellacasa embraces as “matters of care” (2017, pp. 66-67).

We are two designers with different trajectories in healthcare, yet with harmonious curiosities and concerns about our “collaborative survival” (Tsing, 2015, p.19). What began as a series of transatlantic conversations through the waves of COVID-19 in 2022 evolved into a collective foraging of new worlds. As



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colleagues, thought partners, and friends, we reflect upon our lived experiences and values, unraveling our careers in service and health, and exploring questions for designers, educators, and citizens today.

We seek perspectives that help us to act as “citizen-designers” (Heller and Vienne, 2003; Resnick, 2018) because health and care affect all aspects of our lives. Designing with care is “cultivating a commitment to living worlds” (Puig de la Bellacasa, 2017, p.67) with which we are intertwined.

In a lovingly chaotic exchange, the book *The Mushroom at the End of the World: On the Possibility of Life in the Capitalist Ruins* by Anna Lowenhaupt Tsing offers respite and reframe. Tsing’s book (published before the coronavirus) is a critical observation of life at the fringes of capitalism and its ruins. It offers imaginative learnings about ecosystems and economies through the collaboration required for livable futures.

Healthcare is occupied by scale, efficiency, consistency, and predefined outcomes. So much so that designers are unable to access Tsing’s “polyphonic assemblages” where “patterns of unintentional coordination develop” (2015, pp. 23-24) – the spaces-in-between where care happens. Tsing’s book unearths alternative narratives – honoring interdependencies, diversities, intangibilities – that nurture health and care. Through the metaphor of a precious mushroom that thrives in the ruins of a forest (Figure 1), we find inspiration for design to challenge the fictions and frictions of care.



Figure 1 (Drawing by Miya Osaki): “Matsutake are the place to begin: however much I learn, they take me by surprise” (Tsing, 2015, p.6).

This exploratory paper reflects our conversations and pain points, illuminated by Tsing’s concepts that

resonate with the current state of healthcare. The format is intentionally freeform and open (not final). We offer four “entanglements” (Tsing, 2015, p.5) inviting other citizen-designers to notice ways of embodying care that pop up in uncommon places.

ENTANGLEMENT 1: HEALTHCARE IS AN ASSEMBLAGE, NOT A SYSTEM.

As healthcare designers, we feel an underlying discomfort: a “yes, but” to a dominant, top-down, reductive view of care. Care is validated when commodified, compensated, and provided by approved sources: nursing homes, hospitals, hospices, and health providers. In reality, care is a relational “assemblage” (Tsing, 2015, p.22) – decentralized, generative, and intermingled. Adrienne maree brown’s fractal concept is helpful here because “emergence notices the way small actions and connections create complex systems, patterns that become ecosystems and societies” (brown, 2017, p.3).

Simultaneous rhythms of care emerge in different locations and times: at home, work, in communities. Multiple rhythms of care are essential, not circumstantial: between loved ones, neighbors, coworkers, carers, and healers. Care is a gathering, “a happening greater than the sum of its parts” (Tsing, 2015, p.27). In the spirit of polyphonic assemblages, every interaction, every collaboration is meaningful. Not all similar or replicable, care heals and nourishes the healthcare system. What are the benefits and challenges of embracing the fragmented nature of care?

WE CAN PREPARE, BUT WE CANNOT PREDICT.

“The farther we strive into the peripheries of capitalistic production, the more coordination between polyphonic assemblages and industrial processes becomes central to making a profit” (Tsing, 2015, p.24).

Design seeks iteration and inclusion, yet design structures are limited in practice. We define healthcare journeys in crisp linearity. Oh, the fantastic cleanness of blueprints! Designers dictate processes, players, interactions, mapping resources and measuring up to generalized outcomes and profit.

In checking the boxes, service design risks becoming transactional, even worse, burdensome, and disconnected. So much care happens outside of the lines anyway, every experience is adaptable by the very nature of the interaction. Service should be the in-the-moment performance of humans and non-humans, as much as it is a process. Care grows in this spontaneous exchange.

To unfold this complexity, Hakio, Mattelmäki and Vesselova’s “Lenses of Care” framework examines care as an “act, interconnection and presence” in the practice

of service design education (2019, p. 5). What lenses are required when care is also a design output?

EXPLORE THE KNOTS AND PULSES IN HEALTHCARE.

“Unencumbered by the simplification of progress narratives, the knots and pulses of patchiness are there to explore” (Tsing, 2015, p.6).

Humans are unpredictable, *and* there is value in this precarity. Tsing describes “precariety is the condition of being vulnerable to others. Unpredictable encounters transform us; we are not in control, even of ourselves” (2015, p. 20). We are all citizens needing care. Care embodies our lived experiences, intersectional connections, and positionality. Care extends beyond binaries of giving and receiving. It is the spaces in-between, not easily simplified or codified.

More may shift in healthcare if we explore all the complex knots and patchiness. How might design resist controlling or imposing power through neat boxes and over-planning? How would we invite more care if we allow for intentional gaps and blank spaces?

ENTANGLEMENT 2: CARE IS AN TRANSFORMATIVE ENCOUNTER – ALTERNATIVE NARRATIVES TO SCALING.

Design in healthcare serves entire populations and public health issues. Design is also in service of institutions and companies that shape the environment with their own commercial or political interests. Within this social, political, and financial force field, being able to scale healthcare experiences seems crucial for sustained impact. Scaling approaches derive from industrial mindsets that assume control of the value chain and efficiency gains by broad replication. Design tries to force-fit human-centric approaches into this linear framework of infinite growth.

All too often, when confronted with the complex and atomized field of humanity and care, dreams of efficient scaling collapse. No system readiness, lack of data continuum, regulatory barriers... multiple factors are to blame (Landers, et al., 2023). But beyond unquestionable inefficiencies, our approach to scaling care is reductive and fundamentally flawed. Tsing’s notions of “transformative encounter” and “translation” (2015, p. 28) are helpful to challenge assumptions about scale in a healthcare assemblage.

SCALING OR CARING: CONTAMINATION AND ENCOUNTERS OVER TRANSACTION.

“The important stuff in life on earth happens in those transformations, not in the decision trees of self-contained individuals” (Tsing, 2015, p. 29).

To reach more people, the logic of design and engineering impose necessary rationalizations:

protocolization, metrics, blueprints, and business models for social, financial, and ecological sustainability. In these dimensions, even human-centric care operates differently. By reducing healthcare services to clean, replicable blueprints and KPI-driven protocols, service interactions become controlled transactions between “self-contained individuals” (Tsing, 2015, p. 34), providers (resources) and users (clients). Once the opportunity to transform individuals is gone, so is the care. Tsing’s concepts of “contamination” and “transformative encounters” (2015, pp. 27-28) offer alternative views. Care is necessarily transformative. Care cannot emerge when interactions are fully siloed, coded, and transactional. Allowing contamination through encounters preserves humanity at scale.

By examining scaling closely, we are painfully aware of the frictions and contradictions of design in health. How (and why) would we codify the fear and disengagement of an individual (e.g., after a heart attack) into hard-wired requirements for a solution to help *everyone*? To what extent should we prescribe a choreography of interactions? Can we scale emotions, qualities, and mindsets?

ENABLING EMERGENCE REQUIRES TRUST.

“We are surrounded by many world-making projects” (Tsing, 2015, p.21).

This is not a call to let go of scientific approaches in healthcare design. Understanding the balance between process and emergence may be one of the keys to designing life-centered services that care for one and many. What is fixed, what is left open? A shift in design approaches is needed with new respect for all actors – their lived experiences and skills co-shape the design process. Caring design trusts them to bring experiences to life by enabling, not dictating. In this mindset, we necessarily depart from the industrial framework of scaling through Tsing’s idea of “translation” linking serendipitous patches of worlds together (2015, p. 62).

Cardiovascular health is a huge societal issue (over a million people die yearly in Europe after a heart attack). Health authorities aim at scaling initiatives to help people reduce cardiovascular risk. Yet cardiovascular care is not an abstract concept: a life-threatening event that leaves patients and loved ones riddled with fear, forced to change their lives, uncertain about the future.

The cardiac rehabilitation service in Alcorcón public hospital in Madrid, Spain, offers an example of design emergence and translation as an alternative to scaling. A rehabilitation team devoted years to developing a service supporting people post- heart attack. One highlight is the engagement of patient experts (people who suffered an acute cardiovascular event who receive training to support others) to help hospitalized patients. They collaborate with providers holding the patient’s



hand and offering a glimpse of a better future during a dark time.

The service has a stellar record of outcomes and patient satisfaction. It is also non-scalable by most definitions of the term. It could never happen without attention and involvement of the care team, who perform a myriad of tasks that cannot be captured in a protocol or a blueprint (last minute changes, finding the right expert for a patient, etc.) The commitment of the care team is essential and support for patient experts is understood, celebrated, and incentivized by the institution.

Indeed, the program is expanding, supported by the Spanish Heart Foundation. New relationships form as patient experts become active in other hospitals. The patient expert program is flourishing in some centers, not others, *translated* to a new context every time. Possibilities of adaptation and cross-pollination arise in this process of translation, rather than scaling.

A gem of emergence within the system, no designer was involved in creating this service. What if our role as healthcare designers involved the art of noticing care emergence, and helping it grow?

ENTANGLEMENT 3: FLYING SPORES OF CARE IN GRACEFUL ABUNDANCE.



Figure 2 (Drawing by Marta Lago Arenas): “Spores take off toward unknown destinations...at least occasionally, give rise to new organisms...Spores are hard to pin down; that is their grace” (Tsing, 2015, p. 227).

Care is not always positive. Through a medical lens, care can feel paternalistic and patronizing – blaming and overburdening people for deep systemic issues. Fictions of care perpetuate scarcity, a belief that there is not enough for everyone. Scarcity in healthcare limits who can *afford* it and forces decision-making around cost and time.

Lo and behold, this scarcity trickles down into design. Our mindsets are influenced after years of risk avoidance, grief over impossibilities, and frustrations due a lack of resources and support. Trade-offs feel far from caring and reinforce power dynamics veiled in words like “optimization, streamlining, cost measures, redundancies” eroding design imagination. It is paradoxical to think about healthcare organizations leveraging capitalist mechanisms for more accumulation...and still there is not enough.

Care as scarcity instills fear and control. Alternative thinking is often considered wasteful and naïve. Non-billable services, like eastern medicine, well-being, labor rights, mental health, and midwifery are often deemed inessential and hence inaccessible. An enduring myth that abundance is impossible perpetuates an extractive system, selectively imposing scarcity, or excess, favoring the few in power.

ABUNDANCE TO EXPOSE MORE BLANK SPACES.

“Spores model open-ended communication and excess: the pleasures of speculation” (Tsing, 2015, p. 228).

Open-ended conversations set us into spore-like motion (Figure 2) musing *what else could be*. Design with care requires an abundance of the heart. Abundance is not merely about more resources, but the generous freedom to imagine and act on alternative realities for “collaborative survival” as Tsing suggests (2015, p. 19).

Care is deep collaboration, embracing the messiness while recognizing that outcomes cannot always be controlled. So, we reduce harm, and recognize that designers cannot make all the choices. Care is pluriversal, vulnerable, and soft. Care work is liberatory by design, trauma-responsive, collective as informal, intersectional women-, QTBIPOC-, and disability-led “care webs” (Piepzna-Samarasinha, 2021, p. 32-68).

Social designer and doula, Michelina Ferrara centers abundance and joy as pedagogy, strategy, and ritual: “Design to sustain, heal, and empower our communities” (2022, p. 50). Ferrara’s social design experiment, *Mama’s Care Mobile*, repurposes a not-in-use ice cream truck as a care mobile for families in Crown Heights, Brooklyn. Volunteers circulate mutual care with community doulas, diapers, formula, and ice cream (who doesn’t love ice cream?)

Care activates existing patches of infrastructure to grow assets in communities where they are. How can service design create abundant spaces for us to invent, thrive, live...and care more?

CIRCULATION FOR COLLECTIVE BENEFIT.

Matters of care expose assets and strengths in our community structures to resist the extraction of

resources from the community. Care outside of healthcare settings offers potential for new models of care to circulate in unexpected places (Table 1).

Mutuality over transaction.
 Enough structure is just enough.
 Pay attention to emotions and harm in the systems.
 Respect and Access.
 See many connections.
 Trust that the output is in the hands of the community.
 Compensate for care.
 Expand the scope and length of care.
 Open up dimensions of relationships.
 Develop the art of noticing thru visibility.
 Cherish attention and access as dimensions of care.

Table 1: Circulating abundance in health and care.

During the pandemic lockdown, citizens spontaneously and simultaneously rang bells, clapping every evening in gratitude to healthcare workers. Care is shared through translation (circulating from building to building, across social media) for collective benefit.

When scarcity becomes dogma, care as abundance becomes subversive. If healthcare lets go of its authority, what will happen?

ENTANGLEMENT 4: CARE AT THE FRINGES OF CAPITALIST STRUCTURES.

Top-down efforts in healthcare innovation, under which most healthcare designers operate, often align with a capitalistic history of concentration of wealth. It turns humans and non-humans into resources for investment, in Tsing’s view, by imbuing “both people and things the alienation, that is, the ability to stand alone, as if entanglements of living did not matter” (2015, p. 5).

As a series of transformative encounters, care resists alienation and isolation. Tsing’s concept of “latent commons” offers “fugitive moments of entanglement in the midst of institutionalized alienation” (2015, p. 255). Caring connections occur in the wild even though healthcare services are being uber-optimized.

Inspired by Tsing’s research of matsutake and pickers’ precarious ways of life, we are curious about the interplay between structured healthcare services and the entanglement of care interactions that happen in the community, monetized and not. Extra dedication of unpaid care workers, informal networks, and support

services in conversation with infra-resourced, structured health systems. Like pine trees and mushrooms in the ruined Oregon forest, they need each other to exist.

THE RIGHT TO CARE.

Paradoxically, healthcare invests in innovations that do not depend on a human genuinely connecting with others. Digital health promises greater efficiencies and cost savings, and now A.I. with speedy empathy and insight. Dreams of chatbots replacing connection with a trusted nurse, fantasies of not having to rely on a human conversation, and fictions of not needing trust are dystopian near-futures, underlying the capitalist discomfort with informal, unmonetized care. There is a drive to extract from the latent commons and turn it into profit for a few. Capitalism assimilates care, like matsutake, as a luxury good in salvage accumulation.

The urgency to protect care as a common good is apparent in perinatal care, where an interplay of formal and informal support is especially relevant. In the U.S. without universal healthcare, the business of birth prioritizes speed, efficiency, and control circumventing long laboring times, doula/midwifery, and perinatal care. The health and care of birthing people is unaffordable for many. Privatization and “luxuriation” of perinatal care turn birthing into privilege, widening health inequality, and worsening outcomes. U.S. maternal mortality is more than double of high-income countries, ten times bigger than New Zealand (Tikkanen et al, 2020).

Care as a protected right challenge a capitalist system – time, reimbursement, capacity, and profit at the expense of the latent commons. What if there was freedom for non-capitalist models of care?

As citizen-designers, we resist the system: scarcity is a fiction. Care abounds.

CONCLUSION

WHAT IS OUR MATSUTAKE AS HEALTHCARE DESIGNERS?

Surprisingly, our reflections help awaken us to the mindsets that we have been operating under in healthcare. The imposed scarcity of the healthcare business undermines our ability to thrive. Stepping to the side and looking through lenses of care frame a mosaic-like assemblage – many possibilities to care. Inspired by matsutake foraging and care workers, we view spaces of friction as opportunities.

Taking a pause, we also realize that a space for conversation helps us notice, and call out, fictions of care, in our own assumptions and systems. And care, gradually, becomes an act of resistance.



Care in resistance to:

- ... transactions over encounters.
- ... imposed scarcity over abundant worlds.
- ... alienation and isolation over interconnection.
- ... extraction over encounters.

MAKING WORLDS: IT'S A COLLABORATION.

We offer this piece as inspiration to pick up these conversation threads and create other ones. Mareis and Paim remind us that “[d]esign cannot change anything before it changes itself” (2021, p. 19).

Care allows us to juxtapose, notice, be abundant, find new models to build livable worlds together. In Tsing’s observation, matsutake cannot be cultivated or produced. It’s truly a collaboration.

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CINEMATIC SPACE IN-BETWEEN REALITY AND FICTION

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ABSTRACT

Cinematic space, imagined or real, seen as counter-archive relies on its perceived potential as intangible heritage, its impact on narration in film, and its influence on memory of built space. The research looks into the instrumental role of filmic architectural space as an agent of collective memory. Cinematic space, with its conscious or unconscious intentions, and multiple views, is neither neutral nor passive. Film is more than a form of expression, its spatial manipulation is oftentimes contrary to the usual understanding of space. Therefore, the space assembled through cinematic techniques becomes a tool for critical research on architecture, permitting alternative interpretations of architectural spaces.

INTRODUCTION

Architecture and film have become especially interrelated since the 1940s (the era of early modernism) with help from the emergence of the modern metropolis that significantly influenced the modification of human perception. Reproducible technologies like film and photography greatly changed the relationship between history and materiality.

The abolition of the continuous Euclidean notion of space created a fertile ground for intertextuality - basic characteristic of modern space of the twentieth-century (Stierli, 2018).

Michel Foucault's lecture 'Of Other Spaces' from 1967, first published in English in 1986, is still a subject of debate. It began with the claim that "the present epoch

will perhaps be above all the epoch of space. [...] the epoch of simultaneity: we are in the epoch of juxtaposition, the epoch of the near and far, of the side-by-side, of the dispersed (Foucault and Miskowiec, 1987)." Foucault calls attention to Heterotopia(s) - the 'counter-sites' that stand "outside of all places, even though it may be possible to indicate their location in reality," which are often seen in cinema.

SPATIALITY IN CINEMA

Cinematic space - the type of space in film - according to French director Éric Rohmer (Grosoli, 2018) is the primary unit of filmic spatial representation. It can be seen as the ensemble of landscape, buildings, objects and people. Cinematic space is often constructed by defragmented and partial elements, and by the use of film techniques, primary montage, continuous perception of place is created. According to architect Andreas Kretzer (2021): "Cinematic space comprises three types and reference values: the space that is represented in the individual shot, the assembled space of the montage and the spatial imagination stimulated by sound." Kretzer argues that the cinematic conception of space is driven by the access of spaces that are only indicated or implied off screen.

Richard Martin proposes a method of analysing cinematic architecture - intersection of architecture and film - as an example that would allow greater perceptual range needed to understand how one experiences the space of the modern city. As Martin (2014) pointed out: "Through a variety of techniques, a film director generates space, immerses us in a sequence of scenarios, creates a narrative from rooms and corridors, focuses the traveling eye on specific features, commands our sensory experience - all of which requires an architectural imagination." In other words, cinema functions spatially.

Cinematic spaces are neither neutral, nor passive; on the contrary, (re)assembled through cinematic techniques, they tell us stories with spatial manipulation oftentimes opposite of usual understanding of architecture. They



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can embody, overwrite, or even modify our memories by using cut-ups, loops and slow motion. As British artist Mark Leckey indicated with the video essay ‘Fiorucci Made Me Hardcore’ - compilation of found footage from the British underground music and dance scene - where image is treated as found object. Presumably, our choice of preservation or demolition of one’s own memory is shaping our collective memory of the space.

CINEMATIC SPACE AS CONSTRUCTED MEMORY

The early outcome of the design-driven research “Spatial narratives in film” by Nina Bačun (2021) was transpired into the essay film *Bonding Humanity (Perhaps Manifesto)* - BH (PM). BH (PM) was created by deliberately rearranging, reorganising and juxtaposing fragments from New Yugoslav Film, and its segment known as ‘Black Wave film’ (Kim and Madžar, 2014) and its cinematic heritage related to the interaction between collective spaces and their use. In the film personal, social and political contexts intersect into a dialogic narrative form that advances possibilities for new interpretations. At the same time, the voiceover manifesto is manoeuvred to evoke personal trajectories as well as collective memories as fragments. Those fragments of memories are linked together by elliptic montage. Some images are based on associative values, while others are not. Within BH (PM) spaces, architecture and actions are used as triggers for inducing memory by ‘constructing’ it. The vocal part is shaped by the use of ‘linguistic montage’ made out of a network of ‘verb adjectives.’ Words are linked together to yield a new meaning, an open, closed or hyphenated compound. Altogether images, text, dramaturgy of text and sound are associated in a whole with the assumption of ‘ideal’ heterotopian environment(s), inhabited and activated with human and/or nonhuman in different ways (see Figure 1). The Manifesto subtly expresses mental and physical environments we inhabit, consciously or unconsciously, in our memories. It speaks of a specially constructed memory built of cinematic spaces. And even though we do not share the same language with our environments, somehow, we are constantly trying to give spaces a human voice. We could even speak about the poly-perspectivism of spaces, particularly cinematic spaces, because they carry their own story and the story, we imprint onto them. Additionally, different people imprint different meanings onto spaces. Film is using a portrait of the past to say something about the present, at the same time involving the form of the essay film as a tool for creative exploration. It questions if nostalgia can be used as a tool for retrieving our collective memory once architecture’s relationship with memory has been revealed.



Figure 1: Bačun, Nina (2021) *Bonding Humanity (Perhaps Manifesto)*, screenshots

THE WORLD AS OBJECT AND AS IMAGE

Intertwining disciplines such as visual art, architecture and the moving images create a poignant issue of not being able to firmly position any of those interdisciplinary works.

But to be reminded Walter Benjamin (1973) claimed: “Anything about which one knows that one soon will not have it around becomes an image.” Benjamin’s sense of materiality can be seen as enabling history to be presented in objects, yet he predicted the power of image and the decay of the physical.

In confronting modernism, filmmaker and writer Hito Steyerl (2010), depicts our desire to transform ourselves and the world we inhabit into images. According to art critic, curator and writer Marit Paasche (2011) “Steyerl offers a refreshingly novel position - one that allows the subject to identify with the image as object” as she notices “the subject is no longer the centre of the universe but on equal terms with other objects: history’s pile of scrap (Bull & Paasche, 2011)”. Steyerl introduces a ‘shift in perspective,’ a concept of the object and objectivity and the way images alter the relation between subject and object in identification. Steyerl challenges Benjamin’s pessimistic outlook of a future with her optimistic objectification of the

reproducible image as something ‘valuable,’ that even gain value in being shared through social media.

Perceiving cinematic space as a potential alternative archive one needs to be aware that digital environments, same as built environments, show symptoms of decay; “The bruises of images are its glitches and artefacts, the traces of its rips and transfers (see Figure 2 and 3). Images are violated, ripped apart, subjected to interrogation and probing. They are stolen, cropped, edited, and re-appropriated. [...] Manipulated and adulated” (Steyerl, 2010).

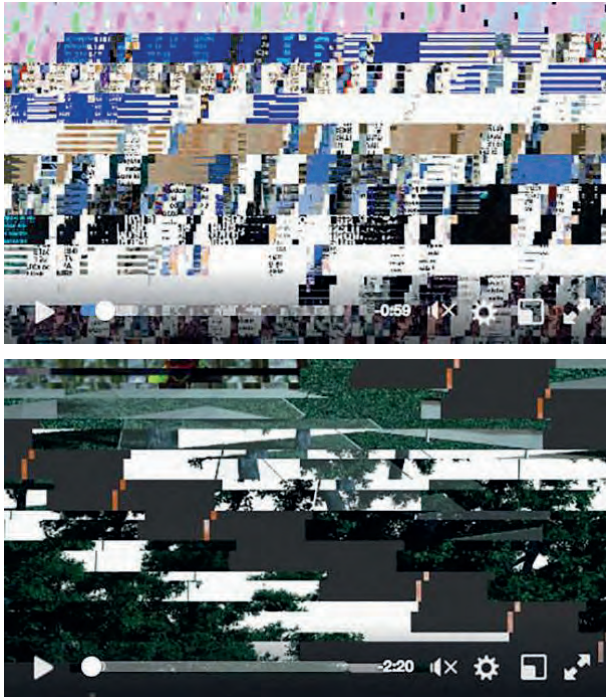


Figure 2, 3: Giunio, Andro (2016) *Playback_issues*, screenshots

The relationship between man and the world consists of both: the world as object and as image. If image operates as a mediator between humans and the world, one needs to acknowledge what digital image is, and how to approach it nowadays. By learning what we already know and how things matter to us, we can realize the history of what we see. As Marguerite Duras (1972) pointed out: “I shall not go to school any more. Because at school they teach me things I don’t know.”

Should we perhaps unlearn how to look at images? As Danièle Huillet and Jean-Marie Straub (2021) did in their rebellious filmmaking by rethinking how to translate the grammar of an image to explore the space in between. The question is not only what images are and what they bring us, but also where they take us?

If image doesn’t represent reality, and is just a fragment of the real world, or a fabrication of it, as moving images are in their nature, then one should consider cinematic images as a challenge in building counter-archives with its counter-narratives that would

eventually rebuild our social space.

If film is something that is saving our reality of the world, ‘cinematic spaces’ can be used to construct memory for the digital archives of our future. ‘Cinematic space’ - the space assembled through montage - becomes a tool for critical research on architecture and heritage, permitting new readings of architectural space, possibly contributing to a new method of spatial research.

If invisible memory is becoming visible within cinematic space or collective memory constructed through film, one could learn how to approach the past, the present, and the future.

If our relationship with images can (re)configure our perception of the past, how can it contribute to better understanding the present, or transforming the future?

What roles can legacies of virtual audio-visual data - moving images; more precisely ‘cinematic spaces’ have in our future(s)?

SUPERVISION

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ABSENCE, GAPS, SPLITS, AND HOLES: DESIGN RESEARCH AS VISIBLE REPAIR

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ABSTRACT

This exploratory paper invokes a typology of textile repair methods as a metaphor for design research. A rising “visible repair movement” is emerging as a strategy for shifting cultural perceptions of the appropriateness of repair while encouraging lay persons to acquire the tools and skills (and confidence) needed to fix things themselves. By doing so, more goods are kept out of the waste stream and ideas about the value of things that are worn or damaged is transformed. Likewise, generally knowledge of research-led design practices could benefit from raising the visibility of the contributions that design research makes to meaningful design practices. By using a visually potent metaphor such as repair, this paper encourages the new ways to understand contemporary role(s) for research.

INTRODUCTION

Absence, gaps, splits, and holes, as well as areas that have worn away are usually perceived as damage. This is particularly true in the realm of environments, products, and fashion. This paper explores how we might think about the repair of such conditions as an analogy for the ways we conceptualize design research methods. Specifically, it considers whether the recent rise in interest in repairing “flaws” using *visible* techniques and strategies that display or highlight interventions provides an opportunity to re-think how to make the role of research in the design process more can

apparent. After defining repair and summarizing the current state of the visible repair movement, I will connect my typology of mending practices to the desired characteristics of contemporary design research to extend our thinking about its current roles and limits, as well as its potential.

WHAT IS REPAIR?

The Merriam-Webster dictionary defines repair as *the process of mending or restoring broken goods to a serviceable state if they become worn or damaged* (Merriam-Webster, 2022). This is an activity with a long history. In her book entitled *Fixation: How to Have Stuff Without Breaking the Planet*, Goldmark (2020) asserts that people in Western countries commonly mended their worn or damaged goods until the middle of the twentieth century. At this time, most people’s knowledge and competency in repair practices declined as consumers became more apt to replace worn items with new ones, either because they perceived new goods as more affordable or because replacement created an opportunity to improve or “upgrade” their belongings through shopping. Goldmark promotes repair today as an environmentally-responsible way to address people’s desire to have—and subsequently discard—belongings. Beyond the noble role of keeping goods out of landfills and waste out of oceans, she also suggests that repair is an inherently creative act, due to the tendency of goods to break in different ways, with each situation calling for a bespoke strategy for the restoration of function or completeness.

Other advocates for repair suggest its ability to help the resource-intensive and waste-producing linear economy of the industrial age with a circular model. Having the capacity to keep goods in use for an extended time is part of what matters in this effort because it requires re-thinking the role of material and product lifespan within the economy. Repair practices also encourage us to redefine how we understand the notion of “raw” materials, because a circular economy is not dependent on large infusions of new raw materials to feed and long-

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term plans for the continuation of your PhD project. production efforts. Instead, it relies on recycling processes and repurposing waste in other ways. The Ellen MacArthur Foundation (2017) suggests that respect for nature and addressing the climate crisis should motivate our desire to transition from a linear to a circular economy.

In his 2021 book entitled *Meaningful Stuff: Design that Lasts*, Jonathan Chapman notes that in much of the global North along with Australia, New Zealand and developed parts of Asia, “the active process of corrective maintenance (repair) has all but disappeared from everyday life.” In addition to the fact that many people do not have the tools, space, or skills to conduct repair practices, Chapman notes that people lack the will to maintain their appliances, garments, and furniture because they have become “socially conditioned out of the making process.”

The authors of *Repair Revolution: How Fixers Are Transforming Our Throwaway Culture* expand Chapman’s description of repair as *preventative* and *corrective* acts to also include *adaptive maintenance*—the need for which is caused by alterations to the environment—and *perfective maintenance*, which is intended to improve product performance (Wackman and Knight, 2020). But while all forms of maintenance have a relationship to human inclinations to nurture, Chapman (2021) also suggests that many people find product repair a “frustrating and demoralizing process” that often ends in failure, additional damage, or a sense that time has been wasted.

Overcoming such hurdles requires the creation of a support community to teach people to perform repair processes or to provide them in a manner that is both affordable and collaborative. As literal repair shops disappear from the urban landscape, movements to promote fixing things are emerging, including the creation of fixer collectives and “repair cafés” where people can bring their worn or broken items and be guided through the repair process by an expert. Because of their typical reliance on local knowledge, repair cafés often connect more directly to the needs of specific neighborhoods, towns, or cities, although the products considered eligible for repair at cafés can be quite wide-ranging from electronics to clothing/textiles to jewelry and furniture to mechanical goods such as bicycles and lawn mowers (Wacker and Knight, 2020).

WHAT IS VISIBLE MENDING?

Because the possession of damaged goods developed negative connotations in the Modern era in Western cultures, cultivating a culture of repair now is challenging. This is, in part, because the goal of mending activities in the past was nearly always to

restore objects to a condition where their repair is undetectable. A high level of expertise is required to perform such actions. Such an approach eliminates an intervention’s ability to serve as a visible argument for keeping goods in an extended state of usefulness, however, so efforts to build a movement that favors the practice of *visible mending* have begun.

Correspondingly, the nature of what is considered desirable as an approach to repair is shifting, perhaps due to gradually rising concern about the climate crisis and the cultivation of interest in developing a circular economy as a primary way to address it. Changing the perception of so-called damaged goods—goods with gaps, splits, or holes, or things that simply don’t work anymore—requires creative strategies for understanding and mitigating their problems.

There are many examples of visible mending techniques found in history. Traditional Japanese approaches to visible mending such as kintsugi (a lacquer repair technique that uses gold) and sashiko (a textile mending technique that uses an irregular running stitch to reinforce tears or thin areas) are still relevant, along with more contemporary ways to patch or reinforce broken material in a growing number of hackerspaces, repair cafés, and fixit clinics that are found in major cities around the world. Information about how to make visible repairs is also available online content that proliferates on social media sites. Kits with the needed materials and tools to make visible repairs are readily available in online marketplaces. Some small manufacturers focus their Instagram accounts on showcasing creative mending strategies to keep their goods in usable condition.

The relationship of these making practices with acts of design has been identified by both Goldmark and Chapman, because “repair is a progressive process that pushes something forward into a coproduced and expanded form,” rather than “a regressive process of restoring something to a former state” (Chapman, 2021). He also asserts that processes that highlight the presence of an intervening repair material or technique suggest the presence of a new type of “transformative repair.” To me, repair and design form a natural alliance because both processes appear to focus on solving a problem or resolving a challenging condition.

A TYPOLOGY OF TEXTILE REPAIR STRATEGIES

After surveying methods for fixing that have been posted on Instagram, YouTube, and Pinterest over the past three years, it is clear that to me that there are a proliferation of possible ways to approach repair and a correspondingly high level of interest in them. My analysis of these sites reveals that there have been hundreds of thousands of postings to Instagram and Pinterest about visible mending as of November, 2022,

along with countless videos on YouTube; many with millions of views. In fact, the prevalence of content about DIY repair on social media is overwhelming, so I will focus this discussion on textile repair strategies in order to provide a more cohesive typology of approaches. Because repairs to textiles like clothing and other soft goods with rips, snags, holes, broken or missing fasteners, or stains are most likely to be undertaken by lay persons, this repair category is both relatable and at least somewhat applicable to a broader range of products. I have determined that approaches to visible (and invisible) repairs to textiles typically fall into one of the following six categories:

INFILL

Many of the methods for repairing products eliminate the presence of a hole by replacing missing material with like conditions—implementing a form of camouflage. This is an especially relevant approach for repairing knitted or woven textiles when individual yarns or threads can be attached and integrated into the existing material. For other types of fabrics, a patch of the same material can sometimes be applied to cover a hole.

RECONNECT

Seamed textiles featured in many types of articles of clothing have a tendency to separate or break at stitched joints. The type of repair needed often requires the addition of new material to reinforce torn edges in order to create a new strong connection. This can be achieved with the use of a backing material that won't be seen such as fusible tape or a complementary additional material can be stitched into the area to join the torn edges and perhaps to relieve some of the previous pressure on them.

ENHANCE

Some repairs occur by creating a new surface or pattern that contrasts with the original condition. While infill repairs are usually intended to be undetected, advocates for visible repair often leverage contrast in color to call attention to the presence of a patch. Not only do enhancements create an unbroken surface in the textile, but they can contribute to the creation of new patterns, details, or a focal point on a textile's surface.

RE-IMAGINE

This approach to repair alters the purpose of a textile or garment by amending its form or function. Some forms of textile damage are so severe that it is not possible to simply restore a product to its original use. In these cases, disassembly can afford new possibilities for deploying used material as raw material for new objects that may or may not have a relationship to the original piece. This process, often referred to as "upcycling,"

invites exploration and reinvention in ways that infill and reconnection do not.

MACGUYVER

Named after the character in a well-known American late 1980s television series, this is a quick adaptation to a textile or garment to enable it to perform a specific task that may or may not be related to the materials' original purposes. The protagonist of the show often implemented everyday items as tools for tasks for which they were not originally intended. These reflexive or spontaneous acts undertaken while in danger are a version of reimagination that occurs quickly and perhaps temporarily and they are primarily characterized by recognizing relationships between a need and the potential of the available material to address it. Damage to a garment while wearing it often stimulates impulsive intuitive solutions that involve nail polish or office tools such as staplers or tape of various types, for example.

CRITICAL

This is a deliberate modification or correction to a textile that highlights the presence of damage in order to call attention to its cause. Critical mending is related to critical design in terms of serving more as a provocation than as an act that is focused on the restoration of function. Critical visible repair uses characteristics such as exaggeration or humor to call attention to the fact that an intervention or reparation has occurred as a means of communicating the importance of mending's potential to extend the life of goods.

By viewing the damage or failure of a textile as a problem, strategies for repair can also serve as a metaphor for design research. In each case, the repair strategy deployed affects the outcome of the process undertaken, just as design research tactics yield different recommended outcomes; thereby demonstrating the need for a diverse range of research methods to match the growing diversity of domains into which design can be deployed.

POSITIONING DESIGN RESEARCH AS REPAIR

It has been almost a quarter of a century since Susan Roth called design research "an activity in search of a definition" (Roth, 1999). Since that time, many useful definitions have emerged, including the three categories that Faste and Faste (2012) identified a decade ago: 1) empirically-oriented direct observations to identify design opportunities; 2) iterative prototyping with users to determine the usability of design ideas; and 3) speculations that probe cultural discourses and practices to open up possibilities for new design domains. In other words, when there is a "hole" in what already exists, design research has been used to identify how designers can fill what they perceive to be an existing



need, or they can act on the inputs of others to determine what is needed, or they can stimulate new perceptions of what is needed through provocative intervention. More recently, Sanders (2017) has proposed that the purpose of design research is to inspire the design process.

According to Victor Margolin's 2010 historiography of design research, it has been continuously evolving, just as the practice into which it is embedded has expanded. The understanding of what constitutes design practice has grown notably over the past two decades, from a time when it was typically conceptualized as a domain-specific "sequence of decisions made to balance goals and constraints" (Edelson, 2002) to its current identity as an increasingly domain-fluid "materially engaged, world-building activity" (Wilde, 2022). In order to support this more expansive scope, design research has likewise diversified in its purpose, methods, and approaches to how research insights are formed and disseminated. By doing so, its value has been elevated through the emergence of organizations and publications that increase its visibility to those who practice design today. Yet design's identity as a research-based discipline still eludes most public perception because an established visible role for the collection and application of research insights to the exploration and evaluation of design ideas is lacking. Like visible mending's role in the creation of a culture of sustainability, design could benefit from the implementation of (more) visible design research.

Could connecting some of the attributes of contemporary design research to visible mending strategies be useful? To test of this idea, I propose the following possible connections between my repair typology with some key research characteristics. *Infill* or the replacement of missing material with like material is least visible and it correlates well with the most traditional forms of design research processes that respond to clearly defined problems.

Other more nuanced approaches that make repair visible offer alignment with the more complex qualities of design research today. For instance, recent articles by scholars such as Wilde (2020) encourage design researchers to draw from a wide range of disciplines and worldviews to devise appropriate tactics and strategies. The *Reconnect* repair technique is the repair strategy that most captures the spirit of this characteristic because it often depends on the inclusion of a contrasting material that if carefully selected, can add positively to the visible quality of a textile. In fact, both repair and research techniques that reconnect disparate entities are dependent on inclusiveness.

Also according to Wilde and others, today's design research methods have the potential to yield "unexpectedly rich responses" to questions, just as the visible mending strategy I call *enhance* has the potential

to create qualities that are not present in the original subject of consideration by creating new patterns or color schemes. Participatory and collaborative design research usually raises new possibilities and understandings that add texture and depth to what is discovered because people who are the experts of their own lived experiences and who are most likely to be affected by potential design outcomes are included in the research endeavor. Bringing new voices and perspectives to the question enhances what is possible in ways that are often not foreseen.

Visible mending that *reimagines* its object changes it, usually by taking it apart and reassembling it in a new way. The redefinition of all that an object entails as raw material suggests that researchers should think about everything that is collected through a design research process as potentially relevant to the insights that may be drawn. This approach to research provides a strategic and deliberate means to account for the breadth of possibilities that are raised when a wide net is cast for the collection of research data and associated stories, creating another way of conceiving that so-called non-designers have the capacity to contribute to design responses.

Many scholars note the value of using diverse and accessible language and forums to disseminate design research findings. Just as quick, intuitive, and sometimes temporary approaches to visible mending are sometimes appropriate, the scope and pace of design research is hardly uniform. Not every problem requires an elaborate multi-pronged research strategy to gather, interpret, or communicate the insights that are drawn. Expressing research findings in a range of formats to ensure that it is open to all relevant audiences demonstrates the flexibility that is implied by the invocation of MacGuyver's responsiveness to dire circumstances.

Finally, just as critical visible mending creates repairs that challenge those who encounter them to think about the meaning of repair and its implications on systems of consumption, radical modes of design research leverage techniques such as exaggeration or embellishment to push the ways in which insights can lead to unexpected or even contrary possibilities for the sake of making change in stagnant systems or creating innovative responses to seemingly wicked problems.

While direct connections between design research and repair may not be drawn automatically, the use of such a metaphor may help communicate the value of research, as well as the diversity of the forms it takes. Likewise, if we accept the argument that the effectiveness of making repair visible has the potential to shift cultural perceptions of damage and recovery, so too might the implementation of more visible research contribute meaningfully to the case for its value as a necessary part of design practices.

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PROSPECTIVE FILMS, WHEN A STRATEGIC VISION MEETS THE DIVERSITY OF HUMAN EXPERIENCE

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ABSTRACT

Through the medium of corporate vision videos, foresight has become a vehicle for companies to communicate on their vision of the future. These films are of strategic importance and should be both watched and designed with awareness of such purposes. Mobilized on an action research project in the mobility sector, our design team accompanied a company towards defining and formalizing their vision of the future mass transportation system. In this context, we proposed a filmic analysis that served as a basis for recommendations. This exploratory article reports on this process and framework. A typology of corporate videos is presented, which was used by our team to story-board a prospective film. Our concern was to highlight the diversity of human experience rather than conveying simplistic or standardized perspectives on user interactions with specific technologies. Finally, the generative potential of this working framework is discussed.

INTRODUCTION

The field of foresight was born in France in the 1960s, from a critique of political decision-making being based on extrapolating the past. For its founder Gaston Berger, it was necessary to take into account human ends, that is to say, to think about the ends before the means and to question the “why” before the “how”. “See far, see wide and analyze in depth” (our translation from French), said Gaston Berger. Thus, “foresight responds to a need to broaden the spectrum, to consider other ways of seeing, even to the speculative register” (Berger & al., 1959). Going further, the ultimate goal of a prospective approach is “to reconcile wisdom and power, ethical reflection and action” (Durance, 2011), which reaches beyond the scope of political decision. Foresight integrates technoscientific and humanistic perspectives in tangible visions of the future, which inevitably embed designers’ own culture, beliefs, and views of the world. A challenge within this approach is hence to acknowledge and make explicit the decision criteria which led to the final forms, especially since future projections have a performative power in the present (Kinsley, 2010). This broader view is therefore not passive. As (Amar, 2005) points out, that even though this view is “contemplative; it must allow for action; that is, action that is carried out in the present with a view to a future that depends on it, but also the way in which it is carried out and how it transforms the person carrying it out” (Amar, 2005). This is where foresight



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meets design research that also focuses on “something that does not yet exist: it is projective in character, dealing with products of imagination” (Koskinen et al, 2008).

Within the foresight discipline, prospective films propose embodied visions of the future and they are also an interesting format to look at for design researchers interested in projecting, anticipating and inventing new futures. This format has a long history in the Information and Telecommunications sector, where videos have been used to help disseminate research beyond corporate seminars or press conferences (Kinsley, 2010). Over time, they have become of strategic importance in companies' efforts to demonstrate their technological know-how and visions. They are a genre of moving images that present a company's strategy through a specific and often futuristic scenario to show what that value proposition might look like if the strategy is followed (Buur & Ylirisky, 2007, Bergman et al 2004). As such, a scenario is grounded in plausible reality and targets the possible effects of actual or intended strategic choices. However, these films do not necessarily consider accurate technological development of the applications showcased. They are rather oriented towards forms of anticipated knowledge in the present, a logic of "seeing to believe" underlying their production process (Kinsley 2010). The films themselves become prototypes, their content and images conveyed being equally important in the representation of a possible future (Kinsley, 2010).

The targeted public has also become an issue for prospective films. Indeed, not only are they professional design outcomes, but they also can be used as design fiction diegetic prototypes, to apprehend the notion of change (Sterling, 2013). In this line, movies spread beyond corporate boundaries, becoming public objects. The possibility for multiple stakeholders to comment, appropriate or critique on platforms like Youtube, Vimeo, and Twitter raises ontological and political concerns. What should be released or not by corporate actors? To what ends, and with what expectations on the audience?

METHOD

In 2022, our design research team composed of three design researchers and an art-historian specialist in animation films was mobilized on a 3-months design research project for a leading actor of mobility. Following an action-research approach, we accompanied a multi-disciplinary team composed of different business units (Innovation, Strategy and Design). The aim was to reflect and formalize elements for a strategic vision of urban mass transportation systems in 2035. The expected outcome was a detailed story-board for a corporate vision video accompanied

by filmic recommendations. The video story-board was expected to be a combination of:

- scenarios and a technological catalog produced by the company within their strategic roadmap, and
- design scenarios resulting from a 3-month prospective project with 15 students in a Master program in design.

In order to discuss the role of such video vision of the future for the company, we conducted an exploratory study on 22 corporate vision videos from France, China and the United States. These videos were created to be distributed internally and externally, their role being both promotional for future clients, and vehicles exposing the company's vision and values. This corpus does not pretend to be exhaustive, but at least a representative sample of the strategic issues, representation formats and narrative scenarios existing in this filmic genre.

Our study aimed at providing an analytical framework that was also used a projective grid in order to propose filmic recommendation for a specific project. Consequently, our role was twofold. On the one hand, as researchers, we wanted to pursue a critical reflection on corporate visions and their communication through the video format. On the other hand, as designers, we were expected to accompany our client in shaping their own forward-looking scenario, which involved intertwined strategic and esthetic choices. Our ethical requirement was to succeed in conveying an embodied and experience-oriented perspective, in line with the way of thinking and storytelling purported by designers. This research can hence be read as an analytical exercise, as well as an outline of recommendations for prospective films open to the diversity and grain of human experience.

Prospective films, as defined above, embody certain visions of reality. Thus, insights from the film analysis served us to define a five dimensions framework for analysis. This structure allowed us to find common characteristics and compare the 22 films of our corpus:

- **Medium:** techniques of representation, special effects;
- **Camera:** points of view, camera movements;
- **Narrativity:** purpose of the film, vision of the future conveyed, metaphors etc.
- **Atmosphere:** ambient sound, music, chromatic palette;
- **Interactions & relations:** relationships between bodies, objects and environments, but also representation of social phenomena.



From this structured analysis, the study led us to identify four types of videos, ranging on a continuum between the showcase of technical solutions and the communication of strategic visions. The following section displays this typology, cross-referenced with the analytical grid and insights from the literature.

Table 1: Typology of the films studied.

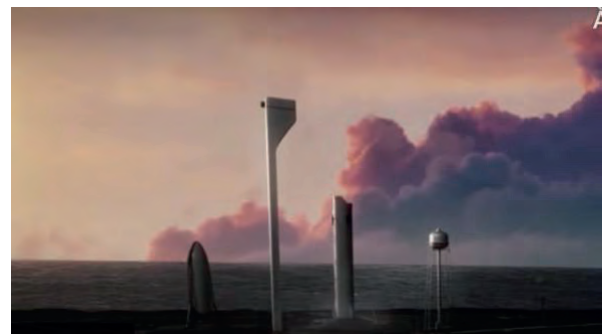
Type of films	Corpus Title of the movie (company/designer, year): short link to access the film)
1. Prototypes in motion	<ul style="list-style-type: none"> - <i>The train that never stops at a station</i> (Ebin Linson Issac, 2010): shorturl.at/fCQ01 - <i>SpaceX Interplanetary Transport System</i> (SpaceX, 2016): shorturl.at/hxKLP - <i>Tesla Autopilot Full Self-Driving Hardware</i> (Tesla, 2016): shorturl.at/coCJT - <i>SkyTran Urban Integration Concept</i> (NASA, 2012): shorturl.at/dvW46 - <i>Essayez la navette autonome sur les berges de Seine</i> (RATP / Easymile): shorturl.at/cBHL3 - <i>Designing the Future of multimodal Mobility - One for all</i> (Siemens Mobility / Moodley): shorturl.at/hJQW0 - <i>A Day Made of Glass... Made possible by Corning</i> (Corning Incorporated, 2011): shorturl.at/pyIM2
2. The big picture - urban planning	<ul style="list-style-type: none"> - <i>Shared Innovation</i> (Bouygues Construction, 2020): shorturl.at/ahC68 - <i>Vinci Construction</i> (Vinci Construction, 2019) : shorturl.at/kBOY2 - <i>Building differently</i> (Eiffage, 2014) - <i>Soft swift ecomobility</i> (Eiffage, 2014) - <i>Haguenau square</i> (Eiffage, 2014) - <i>The gateway of the station</i> (Eiffage, 2014) - <i>The Gare Basse neighborhood</i> (Eiffage, 2014) - <i>The Wacken neighborhood</i> (Eiffage, 2014) <p>All Eiffage videos: https://www.eiffage-phosphore.com/visit-strasbourg-2030</p>
3. Branding & Identity	<ul style="list-style-type: none"> - <i>Eclosia</i> (Motionwip / Eclosia Group, 2016): shorturl.at/vX189 - <i>Decisive moment in defence</i> (Thales, 2017): shorturl.at/oNZ06
4. Fictional stories	<ul style="list-style-type: none"> - <i>Trailer Saison 2</i> (Agence de l'innovation de défense / Red Team Défense, 2022): shorturl.at/uwzI0 - <i>Guerre écosystémique</i> (Agence de l'innovation de défense / Red Team Défense, 2022): shorturl.at/aBJLX - <i>Après la nuit carbonique</i> (Agence de l'innovation de défense / Red Team Défense, 2022): shorturl.at/ewyES - <i>Jewell - For a Healthy Lifestyle</i> (Paradigm Films, 2019): shorturl.at/awLOU - <i>Air Pollution Revealer</i> (Paradigm Films, 2019): shorturl.at/sxI24

1. PROTOTYPES IN MOTION

Vistisen & Poulsen (2017) show that corporate vision videos are a way to prototype the future by exploring the strategic potential of a new technology. As shown in Apple's Knowledge Navigator videos (1987), animation techniques might indeed be used to depict the future uses of a new technology. Thus fiction is used to show

the potential of emerging technologies “as if they were products while attempting to make a future present” (Kinsley, 2010). The videos from our corpus which display such technical developments (a new vehicle prototype for example), are mostly 3D- animated. This medium allows to simulate advanced interfaces and user interactions in a context of use aiming for realism, as if the concept existed and the scenario was really happening.

In this category, staging technologies takes over users' experiences. Indeed the films from this typology focus on the technology and how it works. People are represented in an abstract way, simply witnessing a smooth-running system. The aesthetic dimension may seem simplistic with a minimalist decorum (everyday life objects, urban elements in the city, ...). It seems that the role of this decorum is to arrange the scene or at best to give a notion of scale. The global aesthetics and narrative are smooth and fluid in order to show a technology that works seamlessly. Yet within this category, some videos use emotional triggers, such as *SpaceX Interplanetary Transport System* that shows natural elements like sunrise while inducing and describing the technology.



Picture 2: *SpaceX Interplanetary Transport System* (SpaceX, 2016).

A day made of glass attempts to include the company's technological showcase in a real-life context. A family is shown, enjoying a happy life with high-tech appliances. The scenes shot with real actors and environments are still extremely simplistic focusing on a normalized, perfect and smooth usage of the technology, with omnipresent special effects and caricatured characters. This echoes Kinsey's critique of corporate videos: “technologies are represented being used by (Western) people ‘like us’ in a familiar environment in order to contextualize and normalize the idea of their use” (Kinsley, 2010). Finally, the camera angles and modes of cutting are arranged to direct the viewer's eye toward the devices being used. In this way, the video acts as an “augmented prototype”, a technology that is functional in a fictional, designed context. Indeed, as proposed by Kinsley, such examples show that the credibility of the video is related to how the story around the technological prototype and its usage in a naturalistic context are designed. In our

cases, the design fiction hardly relates to “the present we occupy”, our life conditions with all the tensions and paradoxes involved.



Picture 2: *A Day Made of Glass... Made possible by Corning* (Corning Incorporated, 2011).

2. THE BIG PICTURE - URBAN PLANNING

The second category mainly groups films produced by construction and public works companies. They aim at describing projects that are tightly connected to a site or a region. Therefore, they are much more specific and thus more “credible”. For example, *Eiffage*, the European leader in construction and public works, has developed a series of vision videos that show how the company responds to specific territorial issues. Each video simulates an overall experience of the future project. The territorial issue is treated in a didactic way by mixing bird's eye views, 3D modeling representations with superimpositions of photos, and voice-over to describe the project. All these elements are well articulated. The characters, on the other hand, are limited to neutral silhouettes moving slowly in the same direction. What matters is to show a smooth, “perfect” system functioning. Though situated and addressing social and territorial issues, these videos remain disembodied by design, leaving aside the diversity and complexity of human behaviors and paths. Indeed, humans’ representation in vision videos is not neutral but part of a socio-technical “politics of anticipation... forms of action that mark and code prospective practices” (Kinsley, 2010). The scale of the body is hence sufficient to produce an idea or a sense of “the future”, and how it shall be inhabited.



Picture 3: *The Gare Basse neighborhood* (Eiffage, 2014).

The intended public for such films is hence key in reading their message. As *Vinci Construction* opts for

contextualizing new services and value propositions in major societal challenges (global warming, demographic growth, future mobility), *Bouygues construction* rather chooses to focus on corporate engineers shown at work. Both mean to express a taste for innovation and challenge, the former as a business case, the latter as a lever of motivation for their collaborators.

3. BRANDING & IDENTITY

The third type of films appears more expressive and even “creative”, since it focuses on brand identities at large. Narrativity is richer, and rooted in more global experiences, imaginaries, and values. *Eclosia group’s* film, for example, uses a technique of animated white origami to invite the viewer into a cinematographic experience. The dreamlike atmosphere thus created allows for deeper immersion. The corporate services showcased are narrated through artistic techniques, mixing content and form. The choice of animation, towards a certain amount of abstraction, is thus important for the viewer to freely appropriate the story and universe of the film, in their own subjective space.



Picture 4: *Eclosia* (Motionwip / Eclosia Group, 2016).

In a very different style, *Decisive moments in Defence* opts for highlighting real-life characters using technological services offered by the company, in seamless experiences. In their operations, humans are even relegated to the background, making the film a discourse rather than a story.

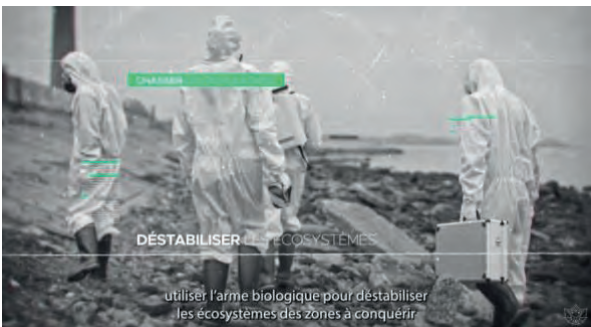
This type of films particularly expresses the ambiguity between fiction and reality (since real concepts and/or services are advertised). What makes a category of these “branding” films, is the enactment of values and imaginaries over the use of technologies (contrarily to the “prototypes” category). The prospective and strategic design stakes are higher here, as a consistent vision of the future must be expressed.

4. FICTIONAL STORIES

Films of this last category simulate an a priori futuristic world, from a polarized vision showing a bias. They thus have an even closer relationship to fiction. The vision videos produced by *Red Team Defence* are an



example of this trend. They are indeed designed for the French Army by science fiction authors, designers and scriptwriters working closely with scientific and military experts. Prospective is used for “serious” purposes: anticipating technological, economic, societal, and environmental factors potentially leading to future conflicts. The videos, shared to a large audience, immerse the viewer in a near-future context through episodes staged in the manner of a series like *Black Mirror*. Such use of fiction, up to dystopia, can also be found in speculative design. For example, *SuperFlux studio* describe this format as “tools, in the form of visceral experiences, leading to pertinent strategies for understanding both the present and the future”. Therefore, the visions embedded in such videos are multiple and conflicting, driving a “shift from thinking about applications to implications” (Dunne & Raby, 2013). Implications go beyond solving a local problem or proposing solutions that can be consumed and used today; they address broader societal issues and sometimes present uncomfortable scenarios, narratives that incorporate the repercussions of technological developments. Rather than “predict[ing] or anticipat[ing] the future, [they] help us understand and debate the kind of world we want to live in” (Dunne & Raby, 2007).



Picture 5: *Guerre écosystémique* (Agence de l'innovation de défense / Red Team Défense, 2022).

In a slightly different style but with a similar purpose, the design fiction project *Jewell* features a connected jewel that can identify health concerns. The particularity of this film lies in the fictitious street interviews that provide feedback on the artifact, thus giving it credibility (as well as to the film). This demonstrates the strong way in which design fiction connects to reality, through “the use of diegetic prototypes to suspend disbelief about change” (Sterling, 2013). However, the viewer of a fiction then returns to the here and now and form their own opinion on the consequences and the promises of the diegetic prototype depicted. Thus, these movies don't aim to familiarize people with a vision of the future (whether positive or negative), they rather momentarily capture attention and imagination for only a short time, in order to stimulate active thinking (Vistisen & Poulsen, 2017).

TOWARDS RECOMMENDATIONS FOR EXPERIENCE-BASED PROSPECTIVE FILMS

Our typology-based analysis did not aim at promoting one kind of video over the others. It rather intended to uncover how strategic issues are embodied in the filmic language and how they are transmitted and perceived by the viewer. All ingredients need to be dosed and combined according to a specific purpose. In our case, the mobility company wished to convey an experiential take on urban transportation. We hence used the analysis to outline a few recommendations to acknowledge in the best possible way the diversity and grain of human paths and more broadly the environmental reactions and situations. Living beings and the terrestrial environment are not just users of a technical system. Therefore, taking into consideration unexpected events, behaviors, even incidents are fundamental in order to produce a projective credibility that was discussed before. All along our analysis, the framework built showed a way in which to understand these elements. Finally, the four types of film complement one another. Within this complementary and using our analytical grid, we tested its generative potential within the project. This intention brought us to formulate design guidelines, that we used to pilot the proposition of a detailed scenario. Sharing this outcome here would be too specific, though the guidelines may have a general scope for our research and practice community. Here are some insights for the design of prospective films, regarding each of the five dimensions of analysis:

- **Medium:** Rather than relying on a single technique, combining several of them creates a more vibrant account. For example, back and forth between realistic images and more sensitive ones makes the best of both worlds, both to represent functional prototypes as well as the organicity of the living being in their environment.
- **Camera:** Diversify points of view, in order to tacitly enrich the script with different experiences, focusing on subjective or overhanging perspective. Everyone has their own way to stand, move and relate, all combining in the context of the situation. Varied & imperfect framing evoke images taken on the spot. Arrange sequences to take the viewer from a bystander to an actor's perspective.
- **Narration:** Music and voice-over are hardly conducive to immersion and active engagement of the viewer. The script should feel as subtle as possible to leave space for life. Characters can be heard talking, along with background and nature sounds... in a seemingly spontaneous way.

- **Atmosphere:** Give a special attention to the haptic feel of materials (texture, light effects...) to convey an organic feel.
- **Interactions & relations:** Urban and natural environments should not be objectified, rather be treated as characters of the film, with their own identities and behaviors. A special emphasis on tactility (among people, objects, surfaces) better expresses the richness of experience. All scenes happen in a global flux of life, which can be sustained by other means (blurry image, ambient sounds, changing colors and points of view).

CONCLUSION

As argued by Kinsely (2010), vision videos are artifacts of self-representation due to their ambiguous status. They use techniques to embark the viewer and make a link between corporate strategic intentions and viewers' feelings. As imaginaries meet, an aesthetic experience is born. It is indeed an impossible mission for design as Mark Blythe points out this experience "cannot be guaranteed even with Hollywood budgets". As expressed in the literature and seen in our examples, this is done in part through representations of gestural interaction that the viewer can physically apprehend. That makes it possible to create a "technological unconscious". To put it differently, by visualizing a technical prototype and the ecosystem in which it will be deployed, viewers rely on their own experiences, values and beliefs to appropriate - or not, the vision propelled by the film. Moreover, typology-based analysis aims at bringing the richness of "critical theory" in video design, by acknowledging their paradoxical status, between fiction and reality. As experiences can only be "designed for" (McCarthy & Wright, 2008), interdisciplinary collaboration with critical theorists, specialists on literature, drama and film would be key to deploy the open-ended potential of such formats.

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“EAR OPENING”: CONCEPTUALIZING AUDITORY REPRESENTATIONS IN SERVICE DESIGN

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ABSTRACT

Many design practices rely heavily on visual and enacted representations, and service design is no exception. Sounds are an inevitable part of a service. As an integral part of a servicescape, they provide cues for action and signal how we interact with the environment. This study explores how auditory representations can be used for the purpose of developing a more holistic and nuanced understanding of service experience through a conceptual exploration that integrates literature with empirical insights. The study contributes to the growing knowledge about service design by suggesting that auditory representations can be approached from the perspectives of sense-making, design work practices and creating auditory representations. It is also argued that these perspectives are implicated by and have implications for ontological, epistemological, and methodological dimensions in service design.

INTRODUCTION

Design is a predominantly visual discipline. This is particularly evident in service design, where using visual representations throughout the design process (Segelström, 2009) is indispensable in designing for many intangible aspects of service experience. Visual

representations are often used to communicate and articulate insights, and maintain empathy during the design process, whether they are summarizing the current or proposing the future service (Blomkvist and Segelström, 2014). They also play an important role in co-design activities where designers, users and other stakeholders participate in exploring, ideating and prototyping future service (Steen et al., 2011). Thus, they have a valuable function of supporting the various stages of the design process by evidencing the intangible aspects of service and enabling shared understanding and communication among the different actors involved (Diana et al., 2009). However, relying predominantly on visualization can not only become exclusive but is often reductive to understanding the overall experience, especially in service where all senses play the part in its constitution and evidencing (Shostack, 1982). Although simulating embodied and multisensory service experience through performative approaches such as theatre (Fragnière et al., 2012; Laurel, 1991) and techniques such as bodystorming (dos Santos et al., 2018; Oulasvirta et al., 2003) can be beneficial, a critical reflection about the dominance of the visual and its limits in representing and evidencing the service experience remains understudied.

With these challenges as a backdrop, our study seeks to explore the role of sound in service design. Specifically, we our research question is “how can sonic representations be conceptualized to inform designers’ understanding of service experience?”. Sounds are an inevitable part of a servicescape; whether they are there with a purpose, such as background music in a cafe, or as a consequential sound, such as a hissing of a coffee machine under operation, they provide cues for action and contribute to the overall experience (Morin et al., 2007). Also, people experience sounds in relation to its temporal and spatial dimensions (Fonseca, 2014), which is distinctly compatible with the emergence of the experience in servicescapes (Woermann and Rocka,



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2015). Drawing on the interconnectedness between the two, we argue that representations in service design can benefit from being extended into the auditory sphere. Following an empirical exploration of sonic representations in 3 different empirical settings, we provide an overview for conceptualization of auditory representations in service design.

LITERATURE REVIEW

REPRESENTATIONS IN SERVICE DESIGN

Service design has been cited as a highly visual design discipline (Holmlid, 2007). Visual tools such as service blueprints (Shostack, 1982, 1984) have been known and adapted over time. While there is an emerging body of research on visualizations, the development of and discourse on visual representations in practice is thriving. Several books and digital repositories have an extensive listing of visual representations amongst others (see e.g., Miettinen, & Koivisto, 2009; Stickdorn et al., 2011; Stickdorn et al., 2018). Given this emphasis on the visual, it comes as no surprise that visual aesthetics should be a significant part of the service design skillset (Roxburgh & Irvin, 2018). One of the goals of visualization is to make services tangible and visible (Kimbell, 2009). Visualizations support articulation and communication of insights from data, help maintain empathy and capture the customer experience (Segelström, 2009, 2010). They may also be used to represent current and future states, facilitate explorative and evaluative learning, and to create shareable items of thought (Blomkvist & Segelström, 2014). Visual representations are often used in various parts of the design process although some research claims such methods may be most suited to the exploration stage of the design process (Li et al. 2016). The use of a specific type of visualization is to a considerable extent dictated by the nature of user data and the intended audience (Segelström, 2010). By externalizing ideas, visualization methods can overcome some of the challenges of designing collaboratively. Using a visual language when collaborating can facilitate conversations and development of shared understanding if the connotative meaning is assigned by those who use it (Overkamp & Ruijs, 2017). Based on the level of iconicity (abstract vs. realistic) and their relation to time (synchronic vs. diachronic), design researchers have proposed four visual archetypes – maps, flows, images, and narratives (Diana et al., 2009) with reference to their purposes, features, and languages. This distinction also underscores the balance in using abstractions to support the description of complexity versus realistic representations to make more intangible aspects like atmosphere and experience visible. However, visual tools are limited in capturing the diversity and richness of service experiences, since they are often focused on making specific details

accessible and tangible. Diana and colleagues (2009) critique the inability of visual representations to fully capture what a service is in a unique, synthesized view, the aesthetic dimensions of a service experience and human behaviors. However, inclusion of different modalities that support and inform visual representations in service design has been limited (Aguirre-Ulloa and Paulsen, 2017).

Some of these shortcomings may be addressed by other design methods and tools. Kimbell (2011, p.300) calls for a shift towards “situated, embodied material practices”. Using material and generative tools can help uncover tacit and latent knowledge (Sanders & Stappers, 2012), and support embodied cognitive processes (Clatworthy, 2011). Using other making approaches such as cultural probes (Gaver, Dunne & Pacenti, 1999) and generative toolkits allow participants to draw their own interpretations and create expressive artefacts (Sanders & Stappers, 2014). Others have also explored the use of materials for a multi-sensory approach to understanding relationships and creating a shared language around these relationships (Aguirre-Ulloa and Paulsen, 2017). Design researchers have also called for development of methods that draw on embodied cognition (Christensen, 2017; Lindgaard, & Wesselius, 2017). Ongoing methods such as bodystorming, service walkthroughs, and roleplays are interactive, constantly changing depending on participation, and increase immersion and experience (Blomkvist, 2016). They allow for the exploration and knowledge generation of how whole services should be implemented including the connections between touchpoints, composition, continuity, and consistency of services (ibid). Embodied methods can also spark aesthetic disruption, “a sensory experience that challenges actors’ existing assumptions about a situation, as a central catalyst for changing habitual action” (Wetter-Edman et al., 2017, p. 6). Aesthetics and aesthetic knowledge play an important role in design methods and practice (Stephens & Boland, 2014; Tonkinwise, 2011). Aesthetic knowledge is “what we know about a problem or a situation through our bodily senses of sight, sound, taste, touch, and smell” (Stephens & Boland, 2014, p. 2). However, while the embodied material methods and tools mentioned leverage aesthetic knowledge, they often emphasize touch and other bodily aspects. The discussion of sound as a sensory, aesthetic mode of knowing is almost absent in service design. This is curious since sound in some form finds itself present in service as an integral part that provides cues for action e.g., ringing a bell to gain the cashier’s attention or as ambient noise e.g., music played in a coffee shop. Given the role that sound can play in the servicescape, it is important that designers tap into this modality to inform their problem-solving and framing efforts. While service designers need not be expert sound designers to acknowledge and



understand the importance of sound in service experience, exploring sound in relation to service offers opportunities for alternative ways of constructing meaning. For this, developing aesthetic and critical listening skills (Fowler, 2013) is vital.

SOUND IN DESIGN PROCESS

While its use in service design is limited, sound is an important part of design artifacts and contexts of use including products, interactive systems, services and urban environments. Increasingly, design researchers argue for new approaches aiming to include different modalities in the design process to complement the dominance of the visual, and they often entail multidisciplinary knowledge. In the product design domain, a multi-sensory design approach is concerned with product development where sensory immersion and knowledge informs design decisions throughout the design process (Schifferstein, 2011). The aim is to create new ways of contributing to the overall user experience through appropriate sensory stimulation (Godoy Cortés et al. 2018, Moussette and Fallman, 2009, Schifferstein and Desmet, 2008). In that sense, multi-sensory design approach is concerned not only with integrating sounds as a function of the product, but also with using sound for reflective purposes during the design process. Another design discipline closely related to the auditory sphere is sonic interaction design. Drawing on multidisciplinary knowledge such as human perception, cognition, and computing the focus is on the auditory aspect of interaction design including how sounds can be designed to moderate interactions with the environment and create cues for action (Rocchesso and Serafin, 2009). These approaches are often focused on the instrumental character of the sound and its functional qualities. However sonic interaction design is also developing methods exploring interaction guided by sound that is interconnected with embodied cognition and has consequence for both individual and social experience (Caramiaux et al., 2015). This is in line with Delle Monache and colleagues' (2018) recent call for a shift towards a sound-driven design practice that would reflect its human-centered and embodied nature in extending the creative possibilities for design solutions. This also includes exploring sound as a representation.

Questions of meaning related to the auditory experience are of central concern in sound related design practices, especially if they act as interfaces. Auditory perception is not only influenced by the temporality of the sound, but also by the spatial and embodied dimension. Gaver (1993) differentiates between musical and everyday listening, where the former is connected to the properties of sounds themselves, and the latter with the sources of sounds in space. These properties are often defined as loudness, timbre, pitch and duration (Taylor and Campbell, 2001). However, interaction with sounds

is often characterized by the socio-cultural layer and the extent of their presence in a certain soundscape. For example, Fowler (2013), characterizes soundmarks (culturally significant and unique sounds) and keynote sounds (continuous and frequent; forming a sonic backdrop) in a soundscape as a way to provide analytical categories for mutual understanding of a soundscape, which is a necessary step in being able to design it. This suggests that there are opportunities to become more aware not just about sounds themselves but also their situated nature that can be accessed through critical and attentive listening and shared language.

These considerations are important in the context of designing with sound and using sound as a representation and analytical tool since they can provide a broader space for exploring, understanding, and representing the service experience. Although, sound as a design material might require expert knowledge in how it might be used for visual representation, it also provides space for listening, as a new way of seeing and experiencing. In service design, design material evolved from touchpoints and interfaces to institutional configurations involving many actors (Vink et al., 2021). Service design methods and tools can visualize both static and dynamic service interactions, but the question remains how well they can represent more idiosyncratic qualities of service experience (Diana et al., 2009). While Kustrak Korper et al. (2020) have proposed a systematization of sonic representations, sound has not yet become an established material in service design methods and tools.

METHODOLOGY

To explore the potential of auditory representations in service design, we have used systematic combining as an abductive methodological approach that allows for continuous reflection between theory building and the empirical context (Dubois and Gadde, 2002). Systematic combining is a methodology that is considered appropriate in more generative case study research where “theoretical framework, empirical fieldwork, and case analysis evolve simultaneously” (Dubois and Gadde, 2002, p. 554). Given that our empirical setting for exploring auditory representations was both longitudinal and aimed at exploring different types of representations that would inform our conceptual development we deemed this approach suitable.

Table 1: Summary of the study’s empirical settings

	Empirical setting 1	Empirical setting 2	Empirical setting 3
Type	Digital workshop	Studio based sessions	On-site workshop

Aim	Test and experiment with sonification ¹ of visual representations to uncover practice-based insights that can serve as a starting point for building a conceptual framework	Dissect different aspects of using sound in service design; continue experimentation and testing to access emerging themes for conceptual framework	Using specific auditory representations to verify categories in conceptual framework
Duration	2 hours	6 x 2 hours	2 hours
Number of participants (excluding facilitators)	13	18	2
Participant profile	Design academics and professionals	Design master students	Design academics
Types of representations sonified	Blueprint, journey map, storyboard	Sound map, sonic postcard, sound canvas, customer journey, service storyboard, storybraid, desktop walkthrough	Sound map, sonic postcard, journey map, design scenario
Data collected	Workshop recording Facilitators' workshop notes Textual data from chat Miro board participants reflection notes	Facilitators' notes from individual sessions Recorded sound representations during sessions Students' reflection essays	Facilitators' workshop notes Recorded sound representations during sessions

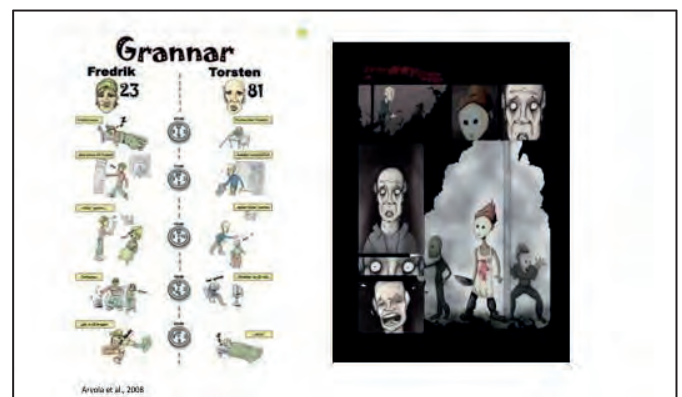
Thus, this approach involves the interplay between the theory, a conceptual framework, empirical context, and a specific case.

In this study, we have based our initial research question on the concepts and theories primarily related to visual representations in service design as well as selected literature related to the role of sound in design. This has

¹ In this study we use the term sonification more as a layman term that implies soundmaking in general, rather than a *terminus technicus* as it is used in sound design and engineering.

also informed the initial direction of the conceptual development. In this study different types of representations that are part of the service design toolbox are considered a case, while the empirical context was spanning across three major empirical settings from February 2021 until June 2022. The empirical settings involved two 2-hour long workshops with design professionals and/or academics and six 2-hour studio-based sessions with design master students from a Swedish university. Table 1 summarizes the main aspects of each empirical setting. Picture 1 shows several visual representations that were used in the sonification process.

Picture 1: Visual representations in sonification process



Although all three empirical settings had specific aims the general purpose was to explore sound as a representation medium, sonification as a method and to spur discussion on knowledge and insights this can elicit in service design. These discussions and reflections have then served as a starting and progression points for further conceptual development along the entire research and analysis process.

It was also important to ensure that in each empirical setting participants were introduced with the main aims of the workshop/sessions. Therefore, since they were mainly exploratory, the sonification process was kept as open and as collaborative as possible to accommodate participants with diverse perceptions of their own musicality and musical expertise. We assumed that exploring sound in such a way might lead to a certain level of discomfort among participants unsure of their own musicality as we did not require any prior formal experience in sound or music making. Thus, our aim was to provide a common ground for understanding sound elements as a design material but leave enough space for improvisation during the sonification



activities. These elements consisted of rhythm, pace, volume, pitch, density, and timbre that participants could combine while sonifying their visual representations. They were treated both as design material as these elements were used in the process of sonification, and as structural properties that enabled participants to analyse, communicate and make sense of auditory information they experienced.

Regarding the structure of empirical settings, it followed the logic of sensitizing, experiencing, and reflecting. Both workshops involved a warmup activity, a central sonification activity and a discussion and reflection part. In the studio-based sessions, activities followed a similar pattern of gradation, but included more representations to be sonified due to structure and allocated timing.

Due to the exploratory nature of this study we have used abductive reasoning as well as a qualitative approach in analyzing our data (Charmaz, 2006, Dubois and Gadde, 2002). The data collected were of various types, but was dominantly focused on facilitators' workshop notes, recorded auditory representations (that were accompanied with facilitators' memos) and participants' reflections. Table 1 provides a detailed summary of data that was collected in each setting that was included in analysis. Regarding the data analysis, first we have coded the textual data using open coding individually between two co-authors. Then in a joint session we have discussed and refined the codes to account for reliability of the data. After that we used axial coding to group and categorize our codes while discussing and reflecting on emerging themes. The results are presented in the following section.

RESULTS

We consider this study a starting point to understand how sound can be understood as a representation in service design. Thus, we consider these results as a preliminary but indispensable step in answering our research question and refining our conceptual framework that can serve as a blueprint for further investigations. Our findings reveal that sound-driven representations evolve around three dominant themes: sense-making, related to the shared understanding of auditory representations; working, related to the practice of building a repertoire of auditory representations, and creating; related to the practice of designing with sound to inform the representations. On a more abstract level these themes connect to different dimensions of this conceptualization, namely the ontological, epistemological, and methodological in service design. They are described in Table 2.

The sense-making theme is connected to the ontological dimension and reflects how sounds are understood and interpreted as well as what kind of meaning they elicit. Our results reveal that sense-making is relational but

can be triggered by various cues dependent on situated or cultural context in experiencing sound. These cues can elicit emotional response such as discomfort or fun and create a sense of intimacy or novelty in experiencing the sound. Context specific and cultural perspective seem to also influence how these cues are shaped, while shared language of experiencing representative and ambient sound can create a common ground for sense-making.

The working theme is connected to the epistemological dimension and the way we choose to work with sounds in the design processes. This theme is connected to the shared understanding and sense-making in using sounds, but it is more closely concerned with the questions of the nature and scope of the sound in relation to personal capabilities in engaging with the sound. In that sense it assumes an existence of established understanding and agreement about the possible roles sound might play in representing service experience; namely in expressing and eliciting emotions, supporting shared understanding, giving service cues, and creating conditions for action.

The creating theme seemingly resembles the working theme, but this one refers closely to the methodological considerations of auditory representations, such as making the shared repertoire of tools and methods that support the design process based on how we decide to use the auditory representations. This theme consolidates different dimensions of sounds that are being used as an auditory material for representations (e.g., using objects to produce sound elements such as rhythm and pace in sonifying a customer journey) or as representations in their own right (e.g., recorded ambient sound of a hospital waiting area).

DISCUSSION

Our findings show there are several implications related to the sense-making, working, and creating with sound. These implications are interconnected, and this study only provides an initial delineation for the three. First, there is a need for a common language and understanding of sound as a design material that can serve as a representation or an analytical tool. Experiencing sound is an embodied action, whether it refers to listening or producing sounds.

Table 2: Conceptual framework with illustrative quotes

Theme	Dimension	Guiding questions and description	Illustrative quote
Sense-making	Ontological	<p>How might sound make visible or help surface latent or tacit aspects of experience? What kind of aesthetic disruption might sound elicit?</p> <p>Related to meaning making. Allows one to distinguish between sounds that are integral to the service experience versus organic and/or ambient sounds. Understanding could be subjective or shared depending on the situated or cultural context.</p>	<p>“I’ve found it to sort of zooming out on the process because the process of sonification is like completely new to me, in this way. And we didn’t necessarily have shared... and nor did we need, but we didn’t have shared understanding on that. It’s like one of those rare moments where you’re like Oh my God this must be what it’s like when we get people to do it... when I get people to do a journey map for the first time ever, right?” P7</p>
Working	Epistemological	<p>How might sound help us interpret and understand people’s experience? How can the use of sound in design processes translate to better experiences? How do we decide what sounds should be included in the service and the sonified experience?</p> <p>Allows us to use sounds to express and elicit emotions, support understanding, give service cues and create conditions for action. Working with sounds requires a spectrum of knowledge depending on how it is being used.</p>	<p>“So, all work I do is and with age, care and health and so you know that being of machines and the sound of of cooks and cleaning and things, how can that be designed in a certain way that becomes a lot more pleasant for a person in a residential aged care.” P12</p>
Creating	Methodological	<p>How do we make the sounds? How do we decide what sounds should be included in the sonification? Creating a vocabulary or shared language for making sound. This could be supported by specific tools and methods that enable making. Making is related to the methodological level. It is about knowing how to use sound to describe different parts of the service or experience– e.g., tempo, pace, density, texture, etc.</p>	<p>“There’s also a pace that we’re also thinking about as well and what it means at least and how that runs for two different people in two different times of the day at the same time. I think when a member of the team brought up an interesting point around the different heartbeats between a very young person and a very old person which are different beats and a percussion, you’re hearing at the back sort of represents that in some ways if we’re tying that back to elderly and well-being as well” P5</p>



Additionally, meaning of sounds is socially and culturally negotiated and constructed which requires service designers to become not only aware of the auditory sphere, but also critical of their own assumptions in facilitating meanings. Participants in the empirical settings have brought up the socio-cultural aspect of sounds very early in the discussions about shared understanding of sounds. This suggests that because sounds are so fundamentally connected to how people experience their environment, but also have a distinct aesthetic and cultural dimension, they can serve as a gateway for a more connected and inclusive understanding of other peoples' experience.

Our findings also show there is creative tension when working with sound. It spurs creativity through play and experimentation, but it can also create tension. This tension stems from feelings of discomfort and intimacy while working with sound as an unexpected and new, unfamiliar design material. While designers have been taught visualization skills and are comfortable working with this medium, participants often expressed hesitancy in sonifying the visual representations. It also creates the notion that a certain level of capability and expert confidence is necessary to be able to engage in sonification activities, especially if they are collaborative. Therefore, service designers would need to not only hone their critical listening skills but also plan and practice their experimentation with auditory representations. This also has implications for design pedagogy. Educators could consider introducing auditory explorations within design studies and allow students to exercise their aural imaginations. Service design project courses could further trial techniques like sound diary and soundwalks as a means for activating new vocabularies and languages that incorporate sound qualities and sounding environments (Fowler, 2013). This will also develop students' critical listening skills. Although this was not the main focus of our second empirical setting, generative design experiments can be conducted together with students to explore how auditory representations might enact aesthetic disruption.

Our findings show that as with visual representations working with sound would benefit from the development of a shared language by those using it. This is particularly relevant in co-design situations where designers and non-designers work collaboratively. Introducing sonification to the co-design process may also enable those who do not rely on visuals to participate in the creative process. At the very least, it provides a springboard to develop more inclusive tools and methods when designing. Participants discussed how the use of sound might be used to capture and convey emotions. They also brought up how they paid more attention to the mood of the visual to sonify it. As a form of representation, it would then be possible to communicate insights related to emotions and experiences as well as maintain empathy.

Soundbites or sound postcards can be recorded from existing service locations to represent the current soundscape. Similarly, designers could create soundboards as auditory equivalents of moodboards to delve into soundscapes and the auditory experience they wish to create in future services. From this study, it is still unclear how auditory representations may facilitate evaluative learning. However, four participants specifically mentioned that switching to a different form of representation acted as a "circuit breaker" that nudged them out of "patterned thinking". This can be viewed as a form of aesthetic disruption that allows participants to question their own assumptions.

When discussing how they approached the actual creation, participants also reflected on the temporal aspects that could be captured through sonification. In comparison to visual representations, time is represented differently through auditory modality as it is at no point static in the way visualizations are. As one participant emphasized, being attuned to sound can create a space for a deeper critical reflection on what it means to be efficient when designing for a service. Using sound elements such as pace, rhythm and density, the sense of temporality can be translated both to the individual experience and systemic structure of the service. Moreover, temporality of sound enables simultaneous representation of experiences that can uncover tensions in synchronicity. Additionally, sound and music elements might also vividly represent relational rigidities such as difference in pace or rhythm related to the individual service experience or more or less harmonious outcomes of service interactions. All these tensions are usually unattainable in visual representations and might go unnoticed. Aesthetic auditory knowledge can allow for iconicity of representation. For instance, one of the groups in empirical setting 1 used fast and slow heartbeats to denote the different timelines for a young and old person respectively and coupled this with their wellbeing.

While this study presents a novel take on auditory representations in service design it is not without limitations and challenges. The ability to create sounds was contingent on the affordability of objects that participants had at hand and their own motivation to participate. In all participant settings participants were given or instructed on visual representations that they then had to sonify. The translation aspects in this study might be more salient due to this aspect since participants did not produce the initial representation themselves. Future research could investigate how sound might be used independently to create a representation. While all participants were familiar with or had some background with service design the same cannot be said for their musical skills. Some participants were better equipped to understand the more technical aspects of sonification due to their background in music

or sound engineering. This could have impacted the sonification process and group dynamics foregrounding the expert-novice capability discussion.

CONCLUSION

This study presents the results of a study spanning across three empirical settings and brings fresh insights on the ramifications of using sound in service design for sensemaking, design work practices and creating auditory representations. The theoretical contributions of this work lie in the demarcation of the ontological, epistemological and methodological dimensions related to using sound in service design. The value of this paper lies in conceptualizing auditory representations by connecting usage of sound and auditory experience in other design disciplines to service design. In doing so, it responds to calls for the utilization of aesthetic knowledge in design practice and methods. We hope that it will inspire designers, researchers, and educators to experiment with and make sonification and auditory representations a part of the service designers' repertoire.

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ABSENT FUTURES IN GOTHENBURG'S JUBILEE ARCHITECTURE

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ABSTRACT

This paper interrogates the relation between architectural design, on the one hand, and social imaginaries of time, on the other. It does so in the context of ongoing research on the futures imagined and enacted in the architectural structures emerging in time for Gothenburg's 2023 quadricentennial jubilee. The argument focuses on the ways in which conceptions of the future are absent, particularly when juxtaposing the 2023 jubilee with the Gothenburg's 1923 tricentennial jubilee. As such, the paper seeks to engage with recent scholarship on temporal approaches to design.

INTRODUCTION

In 2023, the city of Gothenburg celebrates its quadricentennial jubilee. The festivities were originally planned for 2021, but the global pandemic caused the jubilee to be pushed forward in time. Ironically, the same happened in 1921: The tricentennial jubilee was also delayed by two years, in part due to an unforeseen global pandemic. Indeed, time seems to be out of joint.

The delay notwithstanding, the legacy of the previous jubilee ended up being considerable, not least in terms of architecture and urban development. New neighbourhoods were planned and built – either leading up to, or on the back of, the 1923 jubilee – and a host of public cultural institutions were established. Following the tradition of Great Exhibitions, the 1923 celebrations consisted in part in exhibiting the best of what that time could offer in terms of science, technology and other progressive human endeavours.

For 2023, there is no such great exhibition. Nevertheless, one may however speak of a new jubilee architecture emerging. Gothenburg has traditionally been lacking in high-rise buildings, but now a host of high-rises are nearing completion. Moreover, while these developments do not adhere to a municipally-sanctioned unified programme, one may nevertheless explore the extent to which they represent a certain *zeitgeist* or contemporary “structure of feeling”. (Williams, 1977) As such, one may repose the famous question posed by architect and urban theorist Camillo Sitte (2010: 208) – *was ist der Kunst unseres Zeit?* – and reverse it: What is the time of our art?

This paper constitutes an early formulation of provisional themes emerging from a research project on Gothenburg's new jubilee architecture. As hinted above, these developments are interesting markers of the contemporary – in particular when compared with the modernist sentiments of 1923. Given what we know about the modern approach to notions of progress and planning, as well as its general outlook on the future, one may juxtapose such 1923 imaginaries with those of the present.



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The argument of this paper is structured as follows. After a brief comment on the background, methods-related approach, and contribution of this project, the text will then – in section three – outline different approaches to the relation between design and social imaginaries of time. The argument will then, in section four, focus more specifically on *architectural* design and its relation to conceptions and time. It will do so by reviewing Peter Sloterdijk’s discussion on Crystal Palace as the harbinger of the end of history trope. Section five will revert back to the object of this research project – the jubilee architectures of Gothenburg – examining them in the context of socio-theoretical accounts of contemporary temporalities. These will include the Mark Fisher’s work on lost futures, as well as Jean-François Lyotard’s argument about the loss of meta-narratives. The paper ends with a short conclusion.

BACKGROUND AND APPROACH

In this project, as the saying goes, *time of the essence*. For one, the deadlines of the research are non-negotiably tied to the year 2023. (Hence the early formulations presented in this paper.) Moreover, on a conceptual level, conceptions of time constitute a key interest. Again, this is partly because the juxtaposition between the two jubilee sentiments will invariably involve an examination of different notions of time.

There is a further time-related concern at play here. In a sense, buildings – even new ones – are always ruins, which reflect a moment in time that has already passed. Given the time it takes to complete these wonders of art and engineering, and given the fact that the world moves on while blueprints remain fixed, architectural structures are inevitably obsolete upon completion. This bleak reality is somewhat more pronounced in the case of the new jubilee architecture. These structures were planned before the covid-19 pandemic, before the new habits of working from home, and before the concomitant slump in demand for commercial real estate. (Chaffin, 2022; Oliver, 2023) They were also planned before the Russian invasion of Ukraine, the rise of energy and resource uncertainties, and the suspension of the long-standing negative interest rate economy. As such, the events of the past few years have highlighted the need for foresight and anticipation within the design professions that shape the built environment.

These twin concerns – the imaginaries of the future, as well as the foresight practices, of architects and planners – are at the heart of the current investigation. At this point, however, the project is located in the in-between space in which it is too early to draw any conclusions from the ongoing interviews with the designers of the jubilee architecture. Due to this absence of the voices of these design professionals, the scope of the paper is

broader, not focusing specifically on the time-related practices of the professions, but rather on imaginaries of time among users and broader publics.

Thus, the objective of the paper is to explore the relation between architectural design and conceptions of time, paying particular theoretical attention to the notion of absences. It will do so by discussing selected architectural designs with reference to social theory.

As such, the paper seeks to contribute to ongoing discussions within broader design studies on the relation between design and time. However, the argument is not primarily interrogating *experienced* time, either through slowing down technology (Hallnäs & Redström, 2001), through designerly experiments with complex and non-linear conceptions of time (Pschetz & Bastian, 2018), or through focusing on the experience of time as an existential concern. (Rapp et.al., 2022; Odom et.al., 2022) Rather than focusing on *temporal experience* in the context of time-related designs, this paper places a greater emphasis on design – specifically architectural design – as bound up with *temporal thought*. Thus, the focus is on how design may act as conceptual metaphors that underpin contemporary imaginaries of time.

DESIGN AND CONCEPTUAL METAPHOR

In *Metaphors We Live By*, George Lakoff and Mark Johnson seek to show how our modes of thought operate on metaphors – on “understanding and experiencing one kind of thing in terms of another”. (Lakoff & Johnson, 2003: 5) In the 2003 afterword to their original 1980 argument, they point to one key problem in the reception of their book – the tendency for readers to focus on linguistics and therefore misinterpret their idea of metaphors as being *conceptual*. Thus, metaphors are not solely linguistic expressions; not “a mere matter of words”; not solely about the ways in which we talk. Rather, metaphors are at the very heart of conceptualization and reasoning. (245) Thus, we reason by making use of “inference patterns” which transpose one conceptual domain to another conceptual domain. (246)

However, this is not a purely abstract endeavour: “The concepts that govern our thought are not just matters of the intellect”. (3) Metaphorical mappings “are shaped and constrained by our bodily experiences in the world” (247), and this is where design comes into the picture. If indeed our thought is shaped by metaphors in which we borrow from mundane, everyday artifacts, then design is enmeshed with modes of thought.

For the same reason, Lakoff (1986) points out that his work on metaphor was about not “figures of speech” but “figures of *thought*”. Sociologist Johan Asplund (1979: 146-170) uses that same term when reconstructing the Marxist schematic of base and superstructure. Figures of

thought operate in between the material realities of technology and economy, on the one hand, and the discursive level of speech and text. While the latter may be ephemeral, figures of thought tend to be inert, and thus persist over long periods of time. As such, Asplund's proposition may be used as a way to conceive of the relation between design and culture – one in which neither the “base” nor the “superstructure” act as the only determining or explanatory factor.

So, with respect to the question of time, one may imagine how specific “artifacts of clock-time – clocks, calendars, watches, and so on” (Odom et.al., 2022: 151) shape our immediate experience of time. However, the above-mentioned perspectives suggest that there is also another way of approaching the relation between design and conceptions of time. Indeed, designs can be tied to broader figures of thought, which – as Asplund suggests – operate on a longer time-scale, beyond the immediate user experience. As we shall see, some of these may engage with the question of time.

Social theorists have approached this relation between designs and social imaginaries in different ways. Philosopher of science Michel Serres provides one such approach, pointing to the ways in which history has implied a “the parallel development of scientific, philosophical, and literary trends”. (Serres, 1982: xi) This also implies a connection between technological designs, on the one hand, and social imaginaries, on the other. Serres' paradigmatic example is the relation between the steam engine, the science of thermodynamics, and the social theory of the mid- to late-1800s. In this story, engineer Sadi Carnot plays a crucial role in defining the engine as a device that exploits the heat difference between two reservoirs of hot and cold. As Manuel DeLanda explains; “a century after it was born as a concrete assemblage, the steam motor was given a completely abstract description by Carnot”. (DeLanda, 1991: 142) This turned the motor into a conceptual metaphor, which in turn could be incorporated in social thought. Thus, it would later act as a conceptual device used by the likes of Marx, Freud and Nietzsche.

Read Carnot starting on page one. Now read Marx, Freud, Zola, Michelet, Nietzsche, Bergson, and so on. The reservoir is actually spoken of everywhere, or if not the reservoir, its equivalent. But it accompanies this equivalent with great regularity. [...] Each particular theoretical motor forms its reservoir, names it, and fills it with what a motor needs. I had an artefact, a constructed object: the motor. [...] Question: in the last century, who did not reinvent the reservoir? (Serres, 1982: xix)

In other words, when a new, influential design like that of the steam engine appears, it is not a “simple addition

of a new brand of machines”, but “a complete break with the conceptual models of the past”. (DeLanda, 1991: 273) This, by the way, also goes for the shift from the motor age to the computer age: Although it is still early days, one can already trace how the digital has transformed the conceptual models of social theory. (Palmås, 2019)

Here, one may note that such conceptual breaks also imply the rise of new conceptions of time. Indeed, just as thermodynamics is bound up with notions of time, so too is Marx's social theory wedded to a particular conception of social time. Thus, designs – in this case, *technological* designs – can be bound up with social imaginaries of time, operating as conceptual metaphors, even though such designs are not strictly “artifacts of clock-time”.

Another theorist who operates who traces these kinds of metaphoric connections, paying closer attention to design “proper”, is philosopher Peter Sloterdijk. As Stuart Elden and Eduardo Mendieta write, Sloterdijk's work is characterized by

an urge to ground what Hans Blumenberg called metaphorology in philosophical anthropology. For Sloterdijk, in distinction to Blumenberg, this metaphorology is not just preconceptual, or postconceptual, it is also visual, iconic. In Sloterdijk's work we find a continuous play among image, imagination, and imaginary that shuttles back and forth between what we experience and see, and what we can imagine or cannot imagine because we have not seen an image of what it could be like. It thus entirely logical that the three volumes of *Sphären* are filled with images and reproductions [...] (Elden & Mendieta, 2009: 6)

For instance, this connection between designed artifacts and intellectual history is evident in volume two of the Spheres trilogy, *Globes*. (Sloterdijk, 2014) In this study, Sloterdijk traces the European history of imagining the cosmos on the model of the perfect, unified, abstract globe. This history starts off as a globe-shaped conceptions of the divine, and then, Sloterdijk suggests, morphs into the globe-shaped modern market society. The artifacts invoked include maps and ornamental designs, but they also architectural designs. Indeed, there is one particular design that looms large in Sloterdijk's body of work. In the next section, we turn to that architectural design, and the conceptions of time bound up with it.



CRYSTAL PALACE AND THE END OF HISTORY

Much like Serres dwells on the relation between the steam engine and 19th century modern social thought, Sloterdijk dwells on London's Crystal Palace. For him, it is this structure – built in conjunction with the 1851 Great Exhibition – that serves as the harbinger of the modern worldview. More specifically, he credits Fyodor Dostoevsky for having discovered “the crystal palace metaphor as an emblem for the final ambitions of modernity”. (Sloterdijk, 2013: 176) However, before we get into the details of this argument, let us first review the history of the building.

First, one must understand the context of the 1851 Great Exhibition. Conceived in the context of the social unrest of 1848, one can construe it as a counter-revolutionary building, inasmuch as it served to sell liberalised global trade to the masses. (Murphy, 2012) On this account, it was a great success. The cast iron and glass structure was experienced first-hand – first in Hyde Park, then in Sydenham, south London – by a great number of visitors. Indeed, some of them travelled from afar to see the spectacle. As a part of the Great Exhibition, the selling point of Crystal Palace was the great number of goods exhibited in the building. The structure was a demonstration of the wealth of commodities and resources that could be brought to the imperial centre, through liberal trade. Even after the move to Sydenham, the structure was used as an exhibition space and concert hall. However, beyond these exhibits and events, visitors were impressed by the architectural structure as such:

Observers described the building as fairy-like, incomparable, disappearing into the distance, with light pouring down, the interior resembling open air, an endless and shadow-less space, glass-covered vacuum, transparent and fragile. (Margolius, 2002)

Ironically, this aesthetic effect was the result of a building approach in which engineering triumphed over architectural finesse. Joseph Paxton, its designer, was on a tight deadline, and had to rely on mass-produced, prefabricated, standardised elements in the construction of the palace. In the end, this approach proved highly effective. “Never before had so much space been enclosed with so little”. (Margolius, 2002) This feat of engineering would usher in a new era which redefined the very terms of designed enclosures and interiors.

This is the point that Sloterdijk uses as a springboard for his analysis. The very experience of such a vast interior captured the modern political imagination, and the architectural ideas realised in Crystal Palace transmuted into models of social thought. The architecture of the palace served to reassure the citizens of the European

imperial centres that for them, life on the open globe would be safeguarded by a protective, immunising shell. Having seen images of the steel and glass structure, they could imagine a rich nation as a vast Crystal Palace – one which permits global trade, while retaining the separation of haves from have-nots.

The imaginaries produced by the palace also spread to pre-revolutionary Russia. There, it was introduced in the political imagination by becoming a blueprint a socialist, science-led future. In Nikolai Chernyshevsky's *What is to be done?*, published in 1863, the revolutionary heroine Vera Pavlovna dreams about the re-organisation of social life, structured around “a huge, huge building”. There is already, Pavlovna asserts, a building that hints at what is to come; “the palace that stands on Sydenham Hill: cast iron and glass, glass and cast iron — nothing else”. In socialism, then, everyone will live in a Crystal Palace, “for all an everlasting Spring and Summer, an everlasting joy”.

Not everyone shared this enthusiasm about what was to come. In Fyodor Dostoevsky's *Notes from the Underground*, published the subsequent year, the protagonist rants about the horrors of modern rationality, distilling his critique into an assault on the idea of a Crystal Palace future. In the words of Sloterdijk, Dostoevsky showed that this design “held the essence of Western civilization, as if in a final concentrate”. (Sloterdijk, 2013, 28) Thus, Dostoevsky did not dismiss the validity of Chernyshevsky's prediction of a future modelled upon Crystal Palace. Rather, he was horrified by the power of imagination projected by the structure, fearing that it would thrust humanity into a dire predicament. As Marshall Berman (1982: 235-248) points out, Dostoevsky was fond of the idea of modernity as an *adventure* – we should follow the developmental paths unveiled by engineers, “no matter where they might lead”. (242) Chernyshevsky's vision, on the other hand, suggested a modernity as *routine*, with identical Crystal Palaces rolled out infinitely in the countryside.

What's more, Dostoevsky feared that this sorry state of routinised affairs would last forever. In his diaries published as *Winter Notes on Summer Impressions*, Dostoevsky describes his experience of having visited Crystal Palace.

Yes, the Exhibition is astounding. You feel a terrible force which has united all these numberless people here, from all over the world, into a single herd; you become aware of a colossal idea; you feel that something has already been achieved here, that there is victory, triumph here. It's even as if you begin to feel afraid of something. No matter how independent you are, for some reason you feel terrified.

‘Hasn’t the ideal already been achieved?’ you think, ‘isn’t this the end?’

This passage echoes the sentiments expressed by the ranting protagonist in *Notes from the Underground*; the one who fears that reason and collective rationality will quash the will and whim of the individual. Dostoevsky continues:

You look at these hundreds of thousands, these millions of people obediently streaming here from all over the earth – people coming with a single thought, peacefully, insistently and silently crowding into this colossal palace and you feel that something final has been accomplished, accomplished and brought to a close. It’s a kind of biblical scene, something from Babylon, some kind of prophecy from the Apocalypse being fulfilled before your very eyes.

Sloterdijk (2014: 170) reads this sentiment as a statement of the “end of history” motif, the one that Fukuyama (1992) would rehearse after the fall of the Iron Curtain. Here, it is important to remember that Fukuyama’s argument was not a mere celebration of the triumph of Western capitalism – Fukuyama also rehearsed Nietzsche’s cautionary account of the “last Man” for whom the future is no longer tied to a struggle. Sloterdijk’s point is that Dostoevsky voices the same concerns, and does so in an argument intimately tied to a particular architectural design. Thus, visionaries like Dostoevsky and Chernyshevsky saw that “after the expiry of combatant history, social life would only take place in an expanded interior, a domestically organized and artificially climatized inner space”. (Sloterdijk, 2014: 170) Under such conditions, there would no longer be any historical events. More specifically, there would no longer be any capital-H Historical events, history would no longer have any direction. Life would still go on, but time would for all intents and purposes stop. What’s worse, this would last forever, in a “everlasting” manner.

The case of Crystal Palace is instructive for understanding how Sloterdijk conceives of the relation between design, on the one hand, and conceptions of time, on the other. However, it is also useful as a backdrop for the inquiry into Gothenburg’s jubilee architectures. As hinted in the introduction, the 1923 jubilee was borne out of the Great Exhibitions era that started with London’s 1851 exhibition. Indeed, in photographs from the 1923, one can see how ball bearing manufacturer SKF exhibited a giant globe, suggesting a future of foreign market conquest.

Nevertheless, the end of history motif that Sloterdijk traces back to Crystal Palace also looms large over the

2023 jubilee. The next section will explore this theme in further detail.

LOST FUTURES

The motif of the end of the history hints at a loss: The loss of the idea of a future that is open and subject to radical breaks with the past. This motif has been discussed by several theorists, but Sloterdijk is unique in tying it to the metaphors of a particular architectural design. In recent cultural theory, there is an alternative formulation of this motif – one which primarily originates from an analysis of developments in music culture, but nevertheless resonates with the concerns of this paper.

Starting some ten years ago, cultural theorist Mark Fisher (2013) and a host of British writers sought to map the contemporary cultural condition under the heading of “hauntology”. The term itself is borrowed from philosopher Jacques Derrida, a portmanteau of “haunt” and “ontology”, suggesting that there is something spectre-like about the nature of reality. The concept can be used as a way of analysing mediated culture – when we are listening to a recording of an artist, perhaps one that has passed away, we are listening to a spectre. We are listening to an entity that exists, yet does not exist; to an entity that is present yet absent.

In the extended meaning of the term, however, hauntology denotes something more specific: A sense of being “haunted” by memories of alternative futures, a sense of loss of a dream that failed to materialise. In architecture criticism, this sentiment is found in the revalorisation of British brutalist architecture (Hatherley, 2008; Murphy, 2012), but equally in music criticism. Fisher (2013), along with music critic Simon Reynolds (2011), is particularly interested in music that deliberately seeks to capture the sense of past futures; a sense of the future as it was experienced in, say, the 1970s. Such music is, in turn, particularly significant in the context of a popular music scene that no longer seeks to invent music that represents a radical break with the past. During the latter half of the 1900s, popular music generated a proliferation of ever-new genres. In the new century, new music regressed into constant attempts to sound like something from a particular period of the past. Retro became a superfluous term, because all music became retro.

While one may argue with this analysis of music, the broader critique of contemporary culture is clear: We are, Fisher suggests, living in a decelerating culture. The experience of modernity as a sense of all that is solid melting into air (Berman, 1982) – a permanent state of impermanence – is now only detectable in relation to the rapid obsolescence of digital devices. In the case of



the arts, and even more so in relation to political ideas, we seem to be stuck with what we already have. Thus, citing social philosopher Franco Berardi (2011), Fisher argues that we have experienced a “slow cancellation of the future”, in turn echoing the Raymond Williams’ (1989) suggestion of a “widespread loss of the future”.

To what extent is this thesis of a loss of a future applicable in the context of the 2023 jubilee architecture in Gothenburg? To explore what has potentially been lost, one must first revisit the futures posited during the 1923 jubilee. Crucially, the Gothenburg jubilee was not a high modernist affair, even though it coincided with the publication of the publication of Le Corbusier’s *Vers une architecture*. Rather, it served to align Gothenburg’s architecture with the neoclassical ideals that Le Corbusier railed against. Indeed, as Nicholas Adams writes, the 1923 jubilee “signalled a change in the architectural style of the city”, in which there was “a much-debated return to a monumental classical order”, which “held sway over the next decades”. (Adams, 2014: 50) Nevertheless, this neoclassicism was tied to a modern temporal imaginary of progress. Indeed,

the exhibition sought to show how the historical traditions of technology related to both present practices and a vision of a modernized Sweden. Thus, in the great hall (formed in the shape of a Greek temple) exhibitions demonstrated historical and contemporary technological techniques side by side, providing the continuity of the past and present and, by extrapolation, future. (49-50)

Such a programmatic account of the future is not presented in the context of the present jubilee. In that respect, one may indeed speak of a lost future, in line with Fisher’s argument. There is another sense in which current developments resonate with his conception of a decelerating culture. The neoclassicism established during the 1923 jubilee subsequently became a recognisable interwar aesthetic idiom, even outside of architecture. In the current debate on architecture in Sweden – and in Gothenburg in particular – neoclassicism is pitted against modernism. Some observers would say that this debate is ultimately a clash between alternative “retro” aesthetics. The antagonists are both looking back in time, arguing about which past to revive. Indeed, one may indulge oneself in a Fisher-esque thought experiment: If we could travel back in time to the 1950s, and show photographs of today’s modernist high-rises to a modernist architect, would that person believe that the building really is a building from the future?

Still, such a thought experiment is somewhat misguided. Today’s “modernists” tend not to align themselves with the high modernist ideals of the 1950s, especially as such ideals have long been dismissed as obsolete. In his

foreword to Jean-François Lyotard’s (1984) *The Postmodern Condition*, Fredric Jameson points out that architecture was first in line to move beyond high modernism. Its leading figures were revolutionaries; “proponents of innovations in form and transformations in architectural space that could be expected in and of themselves to transform social life”. (Jameson, 1984: xvii) This project failed, and the result was an “overpopulation of the shoddiest glass boxes in all the major urban centers in the world”, effectively meaning that “high modernism can be definitively certified as dead and as a thing of the past”.

Incidentally, Lyotard’s argument from 1984 is also a relevant companion for making sense of the absence of programmatic futures in the 2023 jubilee. This absence is, to a great degree, a reflection of the political economy of the jubilee. Whereas the 1923 jubilee was a private affair producing public spaces, the 2023 is a private affair producing private spaces. Lyotard’s original argument was about the production of knowledge, but the thrust of the argument is still applicable in the context of jubilee architecture. In 1923, the metanarratives of emancipation and totality were still at play in the design of grand plans for the city. Today, we seem to have retreated from such ambitions.

Interestingly, Lyotard has been proven correct in his prediction that something would eventually fill the void left by the loss of the old metanarratives of progress. A new metanarrative is emerging, in which humanity will eventually leave the earth. (Lyotard, 1992; Lyotard, 1997) Thus, today’s hopes and dreams of a radically different future are increasingly projected onto private endeavours to inhabit the moon, Mars and beyond. This kind of “capitalist eschatology” (Palmås et.al., 2022) may be driven by a select few tech entrepreneurs, but increasingly attracts interest from broader commercial domains, including architecture. It makes complete sense that SOM Architects – the designers of Karlatornet – have entered this space. The 245-metre skyscraper may be the highest building in the Nordics, but the work that SOM is now showcasing in festivals is related to space architecture. (Benetti, 2022)

CONCLUSIONS

This paper has outlined some preliminary thoughts on how to examine the relation between the architecture of Gothenburg’s 2023 jubilee and contemporary conceptions about the future. By presenting designs as capable of acting as conceptual metaphors, it has reviewed the social imaginaries of time imbricated in historical structures such as Crystal Palace. It has also sought to tie the 2023 jubilee architecture to contemporary concerns about absent or lost futures.

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THE ILLUSIVE TYPE: HUNTING TYPOGRAPHIC SIMULACRA

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ABSTRACT

Typically, when evaluating iconic typefaces, we investigate the degree to which they communicate well-established connotative narratives. *Helvetica*, for example, is an icon of simplicity and clarity and so, is applied across various designs to exude similar tones. *Bodoni*, a showpiece of Neoclassicism, detailing and adornment facilitated by technological advancement during the 18th century Industrial Revolution, often appears in designs suited to premium brands. Iconic typefaces such as these are tied to their symbolism; it appears that their symbolic ‘myths’ have ‘always been so.’ As I demonstrate however, there are examples of iconic typefaces whose myths are in fact entirely fabricated, illusionary; ‘borrowed’ from the origins of other media, to the extent that they appear more real than their true historical origin. They are, I argue, examples of Baudrillard’s simulacra.

While it is possible to argue that typographic simulacra are deceptive imposters, in this paper, I argue that they may in fact also offer designers a way to look at and apply iconic type that breaks with clichéd connotations attached to it. Simulacra can offer an absence of narrative; a clearing out of sorts, whereby designers generate new connotations – breathing new life into stayed typefaces.

INTRODUCTION: LIMIT ON TYPOGRAPHIC MYTHS

“Typefaces are rich with the gesture and spirit of their own era ... Letterforms frame the message; they place content in historical and cultural context.” (Rock 1994).

Rock’s view summarises a relatively long-standing and by now widely held view of typography as symbolically rich, rhetorical media. As graphic signatures of our culture, typefaces embody rich historical landscapes as well as social, cultural and technological practices of any given era (Heller 2001). As designers know, when electing a typeface to sign a brand, *Helvetica* is often a safe option since it signifies a sense of ‘modernity’ and ‘professionalism’. On the other hand, if the intention of a design is to suggest rebelliousness, a designer might overlay distorted letters over body copy, a few degrees off the horizontal axis and have it bleed off the side out the margins. Alternatively, a designer might opt for *Bodoni*’s luxurious variegated serifs, set in gold foil for the logo of a fashion brand. Or, if they are attempting to convey the idea of ‘poor design’ they may elect *Comic Sans*. For craft beer labelling, a designer may opt for a ‘uniquely’ hand-crafted typeface whereas if the beer brand has historical provenance, an ‘established in’ moniker, set in one of the Blackletter variants may be a wise choice. For a space-themed film poster, geometric, condensed letterforms that are widely tracked is usually a safe bet, and for a horror, a spikey or blood-soaked typeface will do. And if the goal is to elevate a brand to ‘global’ status, a designer may seek to subdue visual peculiarities within a typeface to blend in with the rest of the nice, round, pleasant letters pervading the global landscape at the moment (Figure 1).

There are indeed thousands of examples of these sorts of connotative typefaces; of typefaces that embody



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Figure 1: Examples of various iconic typefaces. **A** | Logos featuring *Helvetica*: Lufthansa logo, designed by Otto Firl, 1959. American Airlines logo, designed by Massimo Vignelli, 1967. Epson logo, designer unknown, 1975. **B** | Dior packaging, logo set in *Bodoni*, designed by Georges Peignot, 1912. **C** | *Yeah, Okay.* poster designed by Caleb Holloway, 2014, set in *Comic Sans*. **D** | Label design of Windhoek lager, designed unknown (c. 1970), logo set in Blackletter variant. **E** | *Alien*, poster design by Philip Gips, 1979. **F** | *Sinister*, poster design (2012), featuring *Trajan*.

historical, social, cultural and technological practices of an era, a place or genre (Rock 1994; Hyndman 2016). Moreover, it is precisely because they are so prolific that their connotations are in turn, so ingrained. Their connotations become, in the Barthesian sense, cultural myths that conjure associative narratives in the minds of viewers. Because of this, they serve as an expansive visual archive for communication designers since they immediately reference what we already know of their context (Bruinsma 2004). It is indeed the case that in current design practice, designers frequently implement symbolic types in their designs as visual shorthand since they embody immediately connotative structures. Myth

has thus become a dominant rhetorical influence in the selection and application of type (Mayo 1993: 41). It is because of Barthes' mythic analysis that we can articulate, in analytical terms, that as signs, letterforms are extraordinarily powerful connotative structures.

One downside to this is that mythic signification can become a communicative crutch; a kind of narrative regurgitation whereby, in the repetitive application of well-established typefaces, we develop typographic clichés. Type applications that continuously resignify cultural narratives and thus become predictable and prosaic. In my experience as a designer and design lecturer, I share Meggs' (2001), Bierut's (2007) and

Heller's (2015) view that at both the foundational and professional level, there seems to be a kind of type-lathery whereby designers are typically so involved in crafting other, more 'obviously' rhetorical design media, such as imagery and layout for example, that type is often only glanced at toward the end of a project. At this point, designers tend either toward 'safe,' 'neutral' typefaces or otherwise regurgitate typographic trends by grabbing hold of trusty, but overused, type canons. The result is that our design landscape is littered with a spiralling continuum of monotonous type applications; a kind of culture jam where convoluted and virtually identical typographic forms dominate; used in the same clichéd ways, in the most predictable of places, over and over again.

In observing the above trend, I have investigated ways to disrupt and re-energise the way designers select and apply type in a symbolic capacity. In researching divergent strands of philosophy, I have considered that it is perhaps useful to look at adapting Baudrillard's concept of 'simulacra' as a framework for dislodging or at least prodding at these deeply entrenched type habits. In this paper I therefore investigate examples of type that illustrate, to varying degrees, breaks in the process of mythic signification. That is, I identify typographic myths that are indiscriminately upended owing to a range of social and technological factors and describe how their narrative 'origins' are diachronically unlocatable. As I shall demonstrate, there are examples of iconic typefaces whose myths are in fact entirely fabricated, illusionary; 'borrowed' from the origins of other media, to such an extent that they appear more real than their true historical origin. Put another way, I identify clear narrative breaks in each example where the typeface moves from being a mythic reflection of 'real' cultural constructions, to that of a hyperreal simulation of reference (Baudrillard 1988b; 1988c).

While there is cause to assert that typographic simulacra are deceptive impostors in this regard, in this paper, I argue that they may in fact also offer designers a way to look at and apply iconic type that breaks with clichéd connotations attached to it. To this end, the methodological focus of the paper is on *iconic* type specimens and not, for instance, lesser known typefaces. This is because the intention is to disrupt *established* connotative attachment to 'iconic' typeface. In other words, I intentionally narrow the focus of the study to typefaces with uniquely discernible mythic qualities.

Toward the end of the paper I focus on ways of implementing Baudrillard's concept of simulacra as a rhetorical tool in the selection and application of iconic typography. Simulacra, in this sense, offer an absence of

narrative; a clearing out of sorts, whereby designers can engage in generating new connotations that breathe new life into stayed typefaces.

SIMULACRA AT A GLANCE

Having written extensively in multiple discursive fields, from philosophy and sociology to cultural literary theory and media studies, Baudrillard's discursive catalogue is extensive. He is also widely regarded as an academic chameleon; having written from a Marxist perspective earlier in his career, he transitioned to adopt more of a post-poststructural, McLuhan-esque take on media as communicative simulators later on. Despite his expansive writing territory, there are several core themes synonymous with his work. Of most relevance to this study is Baudrillard's attempt to make intelligible, one of the most perplexing aspects of the advanced industrial society at the turn of the 20th century – the proliferation of communication through media.

Unlike in earlier decades where communication was limited to relatively local platforms, post-World War II media, Baudrillard argues, employs a kind of world-wide communication montage. Today, our world is governed by pixels on a screen. Communication is governed, that is, by the illusion of images; simulations so convincing that they are more real than reality – they are hyperreal (Baudrillard 1988c). It is a unique reality dominated by objects and signs that are removed entirely from their 'original' context and so have no firm referent. In short, he paints a world dominated by media-induced 'simulations' (Poster 1988).

Baudrillard's concept of simulacra is borne from his critiques on 'structural theories' that proclaim to provide 'objective reality.' For example, Baudrillard critiques Saussure's structural linguistics as well the universalism described in both Lévi-Strauss and Mauss' anthropological and semiological systems (Poster 1988). For Baudrillard, no structural ideology; no system – neither Marx's reductive critique on capitalism nor Saussure's ahistorical semiology – adequately describe how meaning is produced in the late 20th century (Genosko 2002). Instead, each of these systems exist in theoretical violence, as a cyclical reversal or redoubling of the principals they sought to surpass (Baudrillard 1988b). They exist, Baudrillard suggests, as repetitive, repressive simulations: "... they only evoke themselves in an indefinite metonymic spiral" (Baudrillard 1988a). Baudrillard thus embarked on constructing a 'new' theory that would not only describe the production of meaning through signs, but also how signs are circulated.

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Baudrillard (1988b) makes the claim that the entire symbolic system; of production and of reproduction is absorbed and recycled *ad nauseum*. A key aspect to the generation of simulacra is the medium by which they are circulated. Media are simulation machines, Baudrillard argues, reproducing images, signs and codes at a rapid pace (Kellner 1998). He continues that media create spectacles of scenarios that are more intense than scenes of banal, every-day, ‘real’ life (Kellner 2019). At the apex of ever increasing simulacra, we find the digital and programmatic medium. Simulacra, as a coded signal, proliferate rapidly through media, particularly those that exploit digitality – the Internet, social media, artificial intelligence and so on. By way of a digital medium, meaning is abridged into ‘bites’ of codified responses and are perpetually relayed (Baudrillard: 1988b). Because signs are constantly recirculated within our digital environment, their symbolism too, fluctuates indeterminately. Through constant circulation, each sign’s signification is gradually neutralised and eventually terminated. There is nothing left to ground our systems on, apart from a kind of theoretical violence.

From here, Baudrillard steps it up a gear and contends that since simulations are regurgitated indefinitely – an ‘indefinite chaining of simulations’ – symbolic exchange becomes ungraspable. Meaning is no longer produced, but reproduced to the extent that it is turned against its sign. Through constant reproduction, signs become merely ‘models;’ models of the real sign. As models, they reverse origin and finality since its initial symbolism (initial signification) deteriorates as it gradually loses its connotative ‘usefulness’. In other words, the sign’s referential value is nullified because it no longer finds social relevance (Baudrillard 1988b). The result is that there are no longer signs and their signification; referentiality is swept off the table. In their wake are merely their simulations. Every sign, of every system therefore points to a phantom reference; a simulated reference. Meaning is simply reproduced; simulated over and over to the extinction of the ‘original reference’. Simulacra in this way is an allegory of death because, as signs are reproduced further and further (away from its determinate origin), the hyperreal swallows its ‘real’ signification; it becomes reality for its own sake. The sign, in rapid circulation, is emancipated from its origin and is emptied of its historical and libidinal meaning. Gone are the referentials of Saussure’s signification, of Barthes mysticism, of history and of the ‘real.’ All this is surpassed by an era of total relativity; the era of predetermined, meaningless codified prompts and responses (Baudrillard 1988b).

Baudrillard argues that signs today exchange amongst themselves exclusively, without interacting with referential anchors in the ‘real’. The entire ecology of sign-exchange is a spectacle of the real. This spectacle materialises in simulacra of the third order where the binary between the real and the simulacrum collapses. Simulacra produce simulations as signs of the real. They do so to such exactitude that they appear *more* real than the real:

“It is no longer a question of imitation, nor of reduplication, nor even parody. It is rather a question of substituting signs of the real for the real itself.” (Baudrillard 1988c).

Baudrillard argues that simulacra proliferate and reproduce further signs in ever-expanding and spirular cycles. In their ‘senseless unfolding’ simulacra leave no room for any meaning – they are anti-semiological. Baudrillard describes this as the ‘precession of simulacra’; a state of constant recycling of mutable signs to the point of such oversaturation that their referents are destabilised; they are generated by *models* of the real without origin or reality except their own. They are dedicated exclusively to reproduce their occurrence as instances of signs and no longer any ‘real’ referentiality. Simulacra refer only to themselves; a ‘carnival of mirrors’ with no particular aims beyond indefinitely reflecting images projected from other mirrors (Baudrillard 1988b; 1988c).

TYPE AS SIMULACRA

Although Baudrillard’s work has been explored in the context of industrial, architectural, interior design and ‘design’ broadly speaking (see Giovannoni 2016 and Holt 2016), I have yet to come across literature that suggests much of a connection between Baudrillardian simulacra as it is applied in typographic discourse specifically. Every so often however, Baudrillard (1988c) refers to simulacra as being a medium of ‘design.’ For instance, he refers to ‘image makers’ as neo-sorcerers who create the illusion of meaning by artificially revitalising the real (Baudrillard 1988c). Elsewhere, Baudrillard also describes the plight of ‘hyperrealists;’ codifiers who reproduce near perfect visual resemblances to the real. He explains that it is the communicating ‘agent’ of a society that organises signs through communicative media (Baudrillard 1988c). In these citations, although Baudrillard is referring to the ‘designed image’ in general, it is possible to suggest that as a visual image in its own right, type’s visual forms – its letterforms – are potentially a fertile conduit for simulacra. Baudrillard himself seems to insinuate as much when he explains that “as soon as you are in front of the



screen, you no longer see the text as text, but as an image” (Baudrillard 2005). It is thus worthwhile to consider whether type, as a medium of design, may be considered as a form of simulacra in the same way.

Having lived until 2007, Baudrillard would have been acutely aware of how potent typography would become in terms of dominating real estate on screens and other digital interfaces. It follows therefore that the more ‘screen-friendly’ the typographic image becomes, the greater the symbolic reductionism and revisionism it endures (Baudrillard 2005). Baudrillard appears to confirm this when he explains that, as a governing medium of the digital screen, text-based simulacra induce a kind of hyperreal immersion (Baudrillard 2005). Indeed, as designers continue to strip the digital screen of visual debris in pursuit of ever ‘cleaner’ virtual interfaces, they rely more and more on type, as copy, as a descriptive and navigational tool. In doing so, they afford typographic simulacra in particular, the latitude to proliferate extensively within the digital environment. It is therefore possible to argue that type on screen is a *prime* example of simulacra.

TYPOGRAPHIC SIMULACRA - ACCESSIBILITY

As I alluded to above, certain typefaces achieve a level of ubiquity where their connotative myths are perpetually recycled, so that although they are adapted over time and in different contexts, the distinguishable link to their original myth is *strengthened* through each adaptation. One might argue then, that as a typeface becomes more iconic and ubiquitous, its myth is further entrenched. In particular instances however, the opposite occurs whereby it is precisely a typeface’s ubiquity that renders its origin unlocatable; what might at first appear to be a surplus of meaning is in fact directly destructive of itself.

Comic Sans, designed in 1994 by Vincent Connare is a prime example of typographic simulacra here. The typeface was included as a free, supplementary typeface for Windows 95 and upon release, quickly achieved global exposure since anyone with a desktop computer could access it. *Comic Sans* was originally intended to annotate instructions and prompts delivered by a sweet, child-like illustration of a dog named Microsoft Bob (Figure 2). Initially, Microsoft implemented the more formal *Times New Roman* typeface to annotate the programme. However, after receiving largely negative feedback from focus groups, Connare was approached to design a ‘friendlier’ typeface to complement its barking counterpart. Connare explains that he looked to various comic style typefaces of the 1980s from DC and Marvel



Figure 2: Microsoft Bob, in-application extension for Microsoft Office, featuring *Comic Sans*, designed by Vincent Connare, 1994.

comics since they appeared to emanate a more relaxed tone. Connare thus drew *Comic Sans* by hand, using a felt-tip pen, to exude what Garfield (2010) describes as letterforms comparable to the soft, round and blunted end of a child’s scissors. In the decades that followed, unimpeded access to *Comic Sans* has meant that its intended signification is typically overlooked. Since the typeface is so easily accessed on most design and desktop publishing software, it is also haphazardly sprawled across restaurant menus, ambulance and transport decals, clothing, porn sites, church brochures, health and safety signage, instruction manuals, and a near infinite array of other applications that have little or nothing to do with the iconic typeface’s ‘friendly’ tone (Figure 3).

In the case of *Comic Sans*, a primary driving factor in its dissemination is its accessibility through digitality. As I have pointed out, Baudrillard argues that it is through the digital screen that we become progressively less cognisant of the exhaustion of the reality principle (Clarke et al. 2009). Although Baudrillard unpacks this idea in reference to the digital screen specifically, he recognises that the visual screen broadly speaking, induces a kind of immersion that extends to any medium (Baudrillard 2005).



Figure 3: Examples of *Comic Sans* used in various applications. **A** | Regulatory signage for SSE Power distribution plant, Illinois. **B** | Vehicle branding for Die stoofdokter (The stove doctor, photographed by the author, 2015). **C** | Logo design for Kwik pumps sanitation, South Africa (photographed by the author, 2015). **D** | In-application screenshot from the Sex Spicer mobile application.

In the case of *Cooper Black* (designed in 1918 by Oswald Cooper) for example, accessibility is promoted not so much via its channel of delivery, but primarily through its structural form. The typeface was designed at a time when advertising was reaching a new zenith owing to a great resurgence of product demand after the second World War (Heller, in Vox 2020). At the time, several other headline fonts including *Block Condensed*, *Hadrino* and *New Century Schoolbook* were also disseminated for similar purposes. Yet none were nearly as prolific as *Cooper Black* which was used in newspaper headlines and large scale posters to advertise a vast gamut of otherwise disparate products, from car advertisements to cold medicine, music lessons and

turntables to soap, ginger ale, Kelloggs, Spaghetti, puzzles, ketchup, anti-thumb sucking devices, storefront signage, hair products and so on (Figure 4) (Heller 2014).

Apart from vigorous marketing to printers across Chicago, what made *Cooper Black* particularly popular is its formal irregularities (Heller 2014). Compared to other headline fonts, its edges and corners are substantially softened and rounded to the point where, as Heller (in Vox 2020) describes it, the letters look like “... somebody took an air pump to a tire ...” Moreover, the typeface’s counters (particularly evident in the ‘o’) share a uniquely tilted vertical stress. In addition, the baselines of the letters and their serifs are curved (as opposed to straight, as





Figure 4: Examples of 1920s newspaper advertisements featuring *Cooper Black*, designed by Oswald Cooper, 1918-1920. A | Newspaper advertisement for Rollins coupe, *Literary Digest*, 14 January 1925. B | Newspaper advertisement for Brain tools puzzle subscription, publication unknown, c. 1920. C | Grocery store newspaper advertisement for soap, Clicquot Club ginger ale, Kellogg's Bran Flakes and Beechnut spaghetti, publication unknown, c. 1950-1928. D | Storefront signage for a locksmith store, designer unknown, c. 1930. E | Newspaper advertisement for Baby Alice anti-sucking thumb guard, publication unknown, 1931. F | Newspaper advertisement for Musical Masterpiece's Victor turntable, publication unknown, c. 1935.

is typically the case in headline fonts) resulting in a typeface rather forgiving of misalignment, kerning issues and rotational errors. At a time when the materials used for advertising and publication printing – wood and metal – were prone to such errors, it meant that where irregularities in other, more rigid typefaces looked like obvious errors, in *Cooper Black*, it appeared to be an intentional ‘quirk’ in its design. Importantly, this meant that the typeface was particularly accessible to the average user. For instance, smaller businesses and run-of-the-mill shop owners who could not afford a skilled typesetter or signage designer could get away with rudimentary headline and logo applications.

In the decades that immediately followed, the typeface’s popularity grew exponentially. It was even adopted by DIYers of counterculture movements during the late 1960s;

particularly by activists who protested the Vietnam war and proponents of various pro-black movements (Figure 5). At the same time, *Cooper Black*’s bloated forms also came to symbolise the tongue-in-cheek aesthetic of the ‘swinging sixties’ and of ‘flower-power.’ Indeed, up until the 1970s, *Cooper Black* was the go-to typeface, enshrined upon popular vinyl album covers to visually connote ‘soul,’ ‘funk’ and ‘disco’ (Figure 6). Today, the typeface is used indiscriminately in a plethora of applications, spanning multiple thematic genres: in advertisements for television comedies; on packaging for products as varied as ramen and pasta, hotdogs, beans, beer, chocolate and coffee; in corporate airline branding; metal and rap album covers; identification signage, fashion, political posters, religious regalia and, as it appears, even in editorial design for Polish hip-hop artists (Figure 7).

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Figure 5: Examples of activist propaganda posters featuring *Cooper Black*. **A** | ‘Of black America: black history, lost, stolen or strayed’ layout design, *New York Times*, 1968. **B** | Youth International Party rally poster design, designer unknown c. 1968. **C** | Students for a Democratic Society (SDS) propaganda poster, designed by SDS, 1969.

Comic Sans and *Cooper Black* serve as examples of ubiquitous typefaces that have been repurposed so prolifically and indiscriminately that they no longer point to a particular historical origin. It is perhaps possible to argue that connotation evoked by these typefaces is exclusive to either the viewer’s unique frame of reference, or the formal appearance of the letters. In most instances, however, they are most likely implemented because they are accessible. In almost a viral effect of popular culture, the more each typeface is used, the more they are used.

TYPOGRAPHIC SIMULACRA - TACTICAL ILLUSIONS

Where the above examples illustrate a somewhat spontaneous precession of typographic simulacra, in other cases, mythic displacement is more deliberate. Here, I am referring to instances where typographic narratives might at first appear given and organically resignified, but upon closer inspection, are deliberately ‘staged.’ In these examples, typographic simulacra proliferate by strategically hijacking the narrative of another, presenting it as its diachronic origin and in doing so, making it appear as if it had always been so. In these instances, they propagate what Baudrillard refers to as tactical hallucinations; illusions that protect and construct

an origin by depending on a pretext of another reality (Baudrillard 1988b; 1988d).

Playbill, designed in 1938 by Robert Harling, is a particularly interesting example of typographic simulacra in this sense. Conventionally, the typeface is perhaps most immediately evocative of old western genre films. In particular, many would recognise its fat slabs and stretched characters from ‘wanted’ posters (Figure 8). The typeface was, however, not intended as an icon of the Wild West. *Playbill* is actually an example of a late-Victorian Egyptian slab; a family of typefaces characterised by particularly fat (or bold) slab serifs. To begin with, the nomenclature, ‘Egyptian,’ (or *Egyptienne*) itself is a form of appropriative simulacra since nothing would have resembled such a type style in Northern Africa or the Middle East. The name first appears at the turn of the 19th century when, upon returning from a three-year expedition of Egypt, Napoleon brought an array of exotic artefacts that ignited a craze for Egyptian-esque oddities. Egyptian naming conventions thus took hold across Europe, not least by type foundries in France and England who dubbed their newest font styles ‘Egyptian slabs’ (Penney 2016). Hence, Egyptian slabs like *Playbill* proliferated advertising posters on street poles and theatre playbills across the continent (Figure 9).



Figure 6: Examples of vinyl album cover designs of the 1960s and 1970s featuring *Cooper Black*. **A** | Hobo flats vinyl cover design for Jimmy Smith (1963), designed by Chuck Steward. **B** | Benny Carter in Paris vinyl cover design for Benny Carter (1964), designer unknown. **C** | Pet sounds vinyl cover design for The Beach Boys (1966), designed by George Jerman. **D** | Boots vinyl cover design for Nancy Sinatra (1966), designed by Ed Thrasher. **E** | Self-titled vinyl cover design for Buffalo Springfield (1966), designed by Dvore. **F** | To love somebody vinyl cover design for The Bee Gees (1974), designer unknown.

Owing to a significant uptake in information transmission, Victorian design spread globally toward the end of the 19th century contributing to an explosion in printed advertising industries (Jubert 2006). To meet competitive print demands, typographers capitalised on the near limitless capacity of ornamental freedom that technological advancements afforded letterform manipulation, by dressing characters in heavily ornamental flourishes (Heller 2006). Loud, decorative characters, like Egyptians, attained diversity and richness, spawning eclectic innovations composed of expanded, outlined, in-lined, extruded, faceted, floriated, perspectival and bowed forms (Jubert 2006).

A little over 60 years later *Playbill* makes its rather abrupt appearance in western genre films. Hollywood's

predilection toward *Playbill* in particular, is curious however, since the expensive, bulky type presses needed to design and reproduce it were not readily available in the sweeping desert landscapes and rugged rural terrain of the American frontier. Instead, as Garfield (2010) points out, typography before 1880 would most likely have been hand-written since they were circulated locally with limited quantities needed. It is possible that a printing press – which was at the time the only way to reproduce *Playbill* – was used, however, it would have proven far more practical to transport a compact typewriter from larger cities. Even after the 1880s, when national bounty agencies such as the Pinkerton Agency had largely standardised wanted posters, they made use of *Bodoni* or similar *Didones* predominantly (Figure 10).

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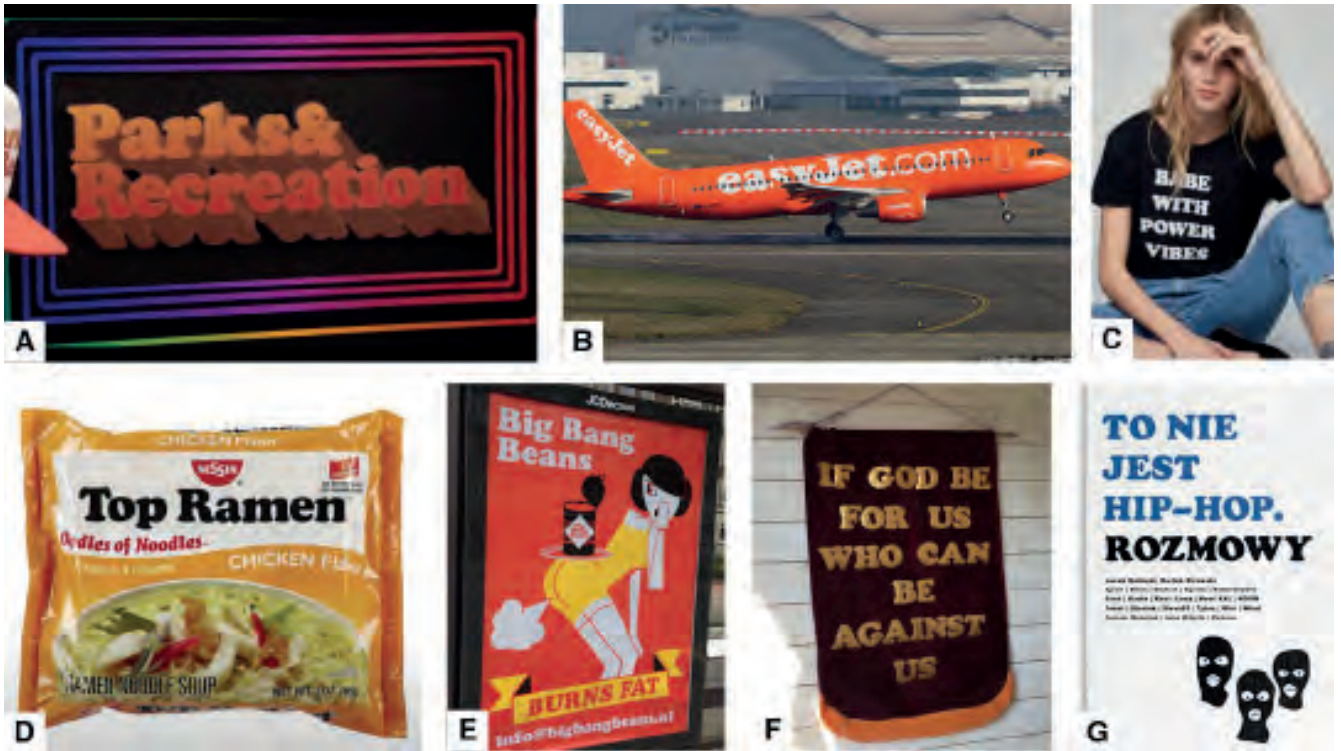


Figure 7: Examples of *Cooper Black* used in various applications from 1995-2021. A | Promotional media for *Parks & recreation* series, 2012. B | Aeroplane branding for EasyJet, 1995. C | Spring/summer fashion campaign poster for Fermé, 2020. D | Nissin's Top Ramen packaging redesign, c. 2010. E | Promotional bus shelter design for Big Bang Beans (photographed by Matthijs Sluiter, 2014). F | Religious inginia (photographed by Matthijs Sluiter, 2018). G | *To nie jest hip-hop. Rozmowy* (This is not hip-hop: conversations) book cover design, 2020.



Figure 8: Examples of 'Wanted' poster designs, featuring *Playbill*, designed by Robert Harling, 1938. A | Wanted poster design for *Pat Garrett and Billy the Kid* (1973). B | Screenshot from *The outlaw Josey Wales* (1976). C | Wanted poster design used in *Django unchained* (2013).





Figure 9: Examples of show bill designs, headlines set in *Playbill*, designed by Harling, 1938. A | Promotional poster for the *Faust* opera, directed by Edmund Rosenthal, Royal Amphitheatre, Leeds, 1866. B | Promotional poster for *Richard III*, director unknown, Pavilion Theatre, London, 1873.



Figure 10: Examples of genuine wanted posters from the early 1900s. None feature *Playbill* (Fifer & Kidston 2003). A | Wanted poster for Jesse Scoble and Calvin Cochran, Blaine County, Idaho, 1913. B | Wanted poster for John Horge, Cando County, North Dakota, 1914.

There is therefore little to no systematic or historical link to suggest a natural connection between *Playbill* and the western film genre. The United States (US) has and continues to dominate global communication via screen-based media and is frequently accused, including by Baudrillard, of haphazardly ‘borrowing’ convenient narratives from other cultures. As is typically the case with Americana, fierce capitalistic endeavours upend the typeface from its original diachronic timeline and supplant it as a hyperreal simulacra. That is, today *Playbill* appears

to have virtually no connection to British or French Victorian type design and even less with the *Egyptienne exotique* of 19th century Europe, but has instead become a simulacrum of the American frontier, cemented in American pop culture (Rath 2016).

In a further example, typefaces of the ‘Chop suey’ family, bear a similar mark of American capitalism whereby their historical narratives are entirely manufactured from the moment the typeface is disseminated. Chop suey is a type of ‘ethnic’ or ‘exotic’ typographic classification, that

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demarcates types designed for consumption by western audiences with the explicit goal of capturing the ‘essence’ of ‘authentic’ Chinese culture (and orientalism in general).¹ These types, which include *Mandarin*, *Peking*, *Karate*, *Jing Jing*, *Rice Bowl* and a plethora of others, are liberally disseminated across various ‘Chinese’ applications – from traditional print media such as Chinese restaurant menus and signage to spatial demarcation branding for various ‘Chinatowns’ around the globe (Figure 11).

Chop suey fonts are however by no means endemic to traditional or cultural Chinese writing practices. Instead, the typefaces’ historical constitution is a by-product of Chinese diaspora and of race-based immigration policies in the US. Briefly, Chinese migrants first arrived to the US as slaves in the early 19th century and by the 1870s, after the completion of the transcontinental railroad, anti-Chinese sentiment escalated. Since the US was experiencing a significant economic downturn at the time, the public generally viewed cheap labour as an economic threat. Subsequently, in 1882, several political institutions succeeded in urging the US government to sign into legislation, a Chinese exclusion bill, which made it increasingly difficult for Chinese immigration and prevented newly settled immigrants from becoming naturalised citizens. The exclusion lasted for roughly 60 years (until World War II where China assisted the US in opposing Japan) during which time Chinatowns around the US developed as sanctuaries for Chinese immigrants. To attract business, local communities within these Chinatowns approached US architects to develop ‘tourist-friendly’ spaces. According to Boman (2022), the architects, having little knowledge of authentic Chinese architecture, incorporated exaggerated ‘oriental features’ such as dragons and winged pagodas, into their designs.

One of the chief by-products of this ‘branding’ exercise, was the development of a similarly branded wayfinding and signage apparatus centred around a typographic system of curved and pointed wedge-like shapes. These shapes, crafted into the letterforms, were intended to mimic the

characteristic form of Chinese brush calligraphy. However, as is the case with the cuisine namesake, Chop suey types are in fact American inventions. That is, Chop suey fonts bear no real relation to authentic Chinese calligraphy since their letterforms do not conform to the stylistic nuances endemic to authentic Chinese script (Boman 2022). The most obvious is that the strokes of Chop suey characters tend to be forced, at random, onto the armature of Roman letters in a manner that ignores the calligraphic emphasis on structural balance and harmony in traditional Hansu. Moreover, the traditional orientation of Hansu characters – fashioned in self-contained ideographic cubes so that they can be read from top to bottom – is also compromised so that text can be ‘read,’ from left to right, by English and other Latin-based speakers (Shaw 2009).

In the examples above, there is clearly tactical redirection of the diachronic trajectory of each typeface’s origin myth. The examples illustrate how typefaces, as simulacra, may present tactical hallucinations – illusions that depend on the pretext of another reality – as a means to construct and subsequently strengthen origins of their own (Baudrillard 1988b; 1988d). The hallucinations are tactical in that like a carnival of mirrors, as they proliferate, they come only to reflect origins of other visual ‘screens’ (Kellner 2019). Typographic simulacra offer a spectacle, not of the real, but of the historical dimension; of our *memory of* the real. Typographic simulacra induce a kind of performed memory; a failure of historical representation to the extent that reality is delimited indefinitely (Baudrillard 2005).

It is also worthwhile pointing out that all the fonts presented here have a uniquely discernible visual quality. Interestingly, the more memorable a typeface is, the more susceptible it seems to be to the whims of simulative infiltration. This might seem somewhat counterintuitive and ironic, since, as I have pointed out, the more iconic a typeface is, the more ingrained its historical origin, its diachronic myth, *should* be. This is however, what Baudrillard (1988b) alludes to when he contends that simulacra short circuit myth.

RHETORICAL CONSIDERATIONS

¹ Chop suey types are not the only example of typographic simulacra that hijack stereotypical ethnic narratives. For example, the simplest way to declare that you are a ‘Greek’ store owner is to substitute any E’s in a brand’s logo with sharp, straight-edged triangular sigmas. A bizarre visual canon has also been established where Victorian Tuscan have become shorthand for authentic Mexican food and alcohol. According to Hyndman (2021), scholars are unable to shed much light on the origins

of this visual connection. One theory is that the letterforms’ spiky silhouette may be reminiscent of traditional hacienda architecture or perhaps cactus thorns. Another follows a particular trend in the practice of digitising Tuscan wood display typefaces during the 1990s, where different types were named after kinds of wood to assign some sort of arbitrary provenance to a wood type origin.





Figure 11: Examples of Chop suey type specimens used in various applications from 1899-2018. **A** | *A trip to Chinatown*, poster design by the Beggarstaff brothers, 1899. **B** | Menu cover design for The Mandarin hotel, 1924. **C** | Title card design from *The scarlet clue*, 1945. **D** | Type showcase featured in *Signs of the time*, July 1943. **E** | Signage design for Toy Sun Chinese restaurant, Berlin Chinatown, c. 1978. **F** | Signage design for Chinese Cuisine restaurant, Brooklyn Chinatown, c. 2006. **G** | Packaging design for Tai pei sweet and sour chicken, 2018.

Now that I have illustrated what typographic simulacra entail, it is worthwhile to unpick communicative implications that may arise, of which designers may wish to consider. There are, for instance, a few scenarios whereby the implementation of typographic simulacra may result in unintended communication; a rather tricky communicative situation that requires more nuanced rhetorical navigation. In promoting the proliferation of numerous and vastly different mythical narratives encapsulated by one typeface, there is a risk of encouraging what Baudrillard (1988c) describes as the ‘precession of simulacra;’ signs that proliferate in a ‘senseless unfolding,’ producing further simulacra *ad infinitum*. There is certainly a concern that left undirected, a network of unruly connotative offshoots may potentially communicate in unintended, or perhaps even devastating ways.

Let me initiate this brief discussion by commenting on Baudrillard’s position that simulacra evolve from the short-circuiting of *difference* through *distance*. He explains that, particularly in the digital environment, distance is everywhere abolished. As we enter the visual screen unimpeded, the visual is stripped of its historical dimension. As soon as we engage with letterforms upon

the screen, we no longer see text as text, but as simulacra; visual noise whose historical dimension is removed from memory (Baudrillard 2005). As I alluded to earlier, the virtual image is uniquely positioned as a prime form of simulacra, especially as it rapidly disseminates, often without contextual reference, across networks. When users view, like and share typographic images (or images that contain typographic content) across digital networks, they often do so in a way that promotes what Szabla and Blommaert (2018) refer to as ‘context collapse’. Owing to the speed and ease with which we view and share information online – that we respond to emotionally, empathetically or intellectually – we may not always have, nor take the time to build as well defined contextual insights or symbolic interactions as we have traditionally done with other, slower mediums of interaction. Thus, our (visual) interactions that revolve largely around contextualisation in online communication are disproportionately flexible when compared to other forms of traditional interaction.

The virtual medium is also powerfully adept at erasing contextual signification that is uniquely perceptible by cultures in particular geographical demarcations,

when viewed by those elsewhere. What is immediately understood by cultures positioned in different geographical regions, may differ immensely. A young South African may not have the same cultural frame of reference by which to interpret the myths attached to *Playbill* typeface, as someone who has lived for a period in England, for instance. Therefore, introducing a typeface that has well defined myths in one geographical area, to a culture that has had less exposure to such myths, may induce fresh perceptions, derived from other forms of ethnographic knowledge.²

The same may be attributed to perceptual differences that arise as a result of distance in time or era. It is not by accident that above, I refer to a *young* South African. Age is of course not the only factor that defines an individual's frame of reference, since access to historical context is fairly accessible in the digital era. What I mean is that as we become socialised from birth, we develop layers of understanding as we age and build 'lived experiences' *naturally* (Mead 1972). For instance, those who were raised between 1920-1970 may have a greater understanding of the narratives that enwrap modernist typography than those after 2000. In many instances, if a teenager today is confronted by a conceptually rich, modern typeface, they may not have a working knowledge of its myth(s). Moreover, although they may have means of accessing streams of information that help clarify, particularly owing to digitalisation, the amount of time they engage with a particular instance of typographic simulacra may not warrant the resources needed to engage *thoroughly*.

Difference in genre is also an area whereby simulacra may be developed. Our understanding of genre develops as we are exposed to different phenomena. Our interests shift over time as we develop new social groups, alter our political inclinations, experience changes in our personality or find new economic grounding for instance. As a result, our formal tastes also alter as we are exposed to differences in taste. We may develop a preference for simplicity over clutter, familiarity over the strange or specificity over ubiquity, for instance.

Even the most seemingly arbitrary or 'dead' signs can develop a kind of meta-narrative; a deep cultural code – a pattern or theme – that replicates and spreads, despite divergent or pre-programmed interpretations. To a large section of the public, certain typefaces may look familiar, yet their cultural codes are not immediately understood. In the case of *Cooper Black* for instance, different, unrelated bytes of information accumulate and render the typeface widely resonant within a global *Zeitgeist*. Although not all readers participate in the values of the symbol, there seems to be a general agreement – a 'global think' – that it indeed has some sort of symbolic value. As a result, the typeface is somehow registered as 'cool,' 'irreverent' and 'youthful'.³ Today we observe these sorts of mythic narrative envelope typefaces more readily. I agree with Henriques and Görtz (2020) that this is largely due to an increasingly digitalised internet society. We like, comment on and share images in more or less an *ad hoc* manner. They are passed on indiscriminately, received largely without much in the way of context, and then shared over and over, to repeat the process. In a snowball effect, each time a typographic image is received, its signs are reinterpreted and reattached alongside an accumulated mountain of others.

One way to mitigate unintended communication is to order and direct it. Barthes (1977) refers to this as the practice of 'anchorage'. He explains that the rhetorician makes use of various techniques to fix the chain of 'floating chains' of polysemous signs, in such a way as to counter the 'terror of uncertain sign.' He extends that the rhetorician "helps me to choose the correct level of perception" (Barthes 1972). Designers are rhetoricians in this sense. Their 'techniques;' the compositional, hierarchical and conceptual design decisions that, in understanding the social and context of the reader, a designer makes, directs or 'anchors' a preferred reading of the design artefact (Rose 2001). I agree with Bruinsma (2000) and Lupton (2000) that the importance of designers as mediating agents in this sense cannot be understated. It is integral to the practice of design that designers have a robust working knowledge of, or at least an ingrained discipline to research

²Although there is a case to be made that the digital environment has 'virtually' eliminated geographical distance (our cultures are becoming ever more mixed and homogenised), our perceptions are nevertheless still largely shaped by ethnographic interactions surrounding local symbolism, social and language conventions, experiential evidence, scientific, biological, contextual knowledge and so on (Strauss 1993).

³This may of course be because its 'blobbish' forms convey a generalised 'retro' aesthetic, but then again, there are at least dozens of other, similarly formed typefaces that have not achieved the same level of social usage.



the historical significance of the typefaces they engage with. The task of the communication designer is to build narrative connections between their designs and audiences. To do so, they ground their work to some degree, in historic precedent, tapping the familiarity of existing symbols and styles (Lupton 2000). In strategically structuring these rhetorical narratives, the designer directs the audience through a systematic sequence of corroborating signs, which cultivates a preferred reading (Atzmon 2008). Designers, practised in the art of researching the visual literacy of a given audience are catalysts in this sense. They come to understand an audiences' cultural references and trigger communication through the visual imagery they produce (Bruinsma 2004; 2005).

DISCUSSION

To this end, I propose there is a potential communicative benefit in encouraging the generation and implementation of certain typographic simulacra in design. I propose that beyond simply adapting catalogues of already existing typographic myths, designers might proactively engage in evolving and directing new mythic trajectories that might yield unique narratives and draw fresh associations.

I recommend however, that although I have unpacked, in some detail, the application of simulacra in the context of typography specifically, designers might consider how simulacra might be framed in a similar (or in fact, different) way, in various other design fields. Moreover, I maintain that although as designers, we must remain cautious and vigilant in the way our design media communicate, simulacra may be useful in disrupting fixed communicative practices – of mythic regurgitation in particular – in design discourse and practice. In purposefully limiting communication that draws on predicted contextual frames of reference, most design media, much like a typeface, may be read as forms of simulacra. In this way, illustration, photography, iconography and many other image-based media may be interpreted through other experiential pathways which, in turn, provides a ripe environment for design simulacra to generate new mythic concepts. In this way, designers may have at their disposal an even greater index of potential visual myths which they can navigate in fresh ways.

Finally, I maintain that the power of typographic rhetoric lies in generating a more holistic understanding of its many communicative facets. I argue that for designers, a thorough understanding of the complexities involved in symbolic typographic communication necessitates not only an understanding of the naturalised myths that

already enwrap letterforms, but also to consider other, less readily accessible rhetorical strategies. If the rhetorical intricacies of type are understood, whereby inter-communicative components of symbolic typefaces are synthesised, designers may be more deliberate in selecting and applying letterforms and therefore direct, and *advance* mythic associations (Buchanan 2001). In acknowledging and understanding the rhetorical complexity of letterforms – that particular letterforms embody interconnected and multi-layered connotations – a designer can be more considered in reshaping meaning.

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MISSING SPECIES: DISCURSIVE DESIGN ACTIVISM

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ABSTRACT

Through a design case, “Missing species”, this article presents how design activism can be applied to a discursive design project and proposes a model for *discursive design activism*. The case study addresses the issue of biodiversity and invading plants due to humans’ interaction with nature and suggests how design may inform and engage societies and individuals through critical imageries, possibly leading to local engagement. Design activism and presenting design outside of galleries and spaces for designers may lead to a larger and more targeted audience for discursive design.

INTRODUCTION

The void of species that are gone, the emptiness of species threatened with extinction, the blank space that tells us what was and what could have been, as a warning of humans’ interaction with nature.

For millennia nature has been there for us to use, enjoy and harvest from. Humans have taken natural resources for granted. Over time human activity has altered the nature of the planet to the extent that scientists have declared a new geological epoch, the ‘Anthropocene’, or the age of humans (Chernilo, 2016; Seddon et al., 2016; Ellis & Ramankutty, 2008; Ellis, Antill & Kreft, 2012).

In this article, the Anthropocene, the human impact on the environment, is illuminated through a design project within the frameworks of discursive design and design activism (Tharp & Tharp, 2018; Markussen, 2013; Julier, 2013; Thorpe, 2008; Fuad-Luke, 2009).

The design project draws on the United Nations’ sustainable development goal no. 15: ‘Life on land’ and the Ipbes Report (2019) of how species extinctions accelerate, with grave impacts on people. Invasive and endangered plants are juxtaposed in a visual future scenario symbolizing the increasing deficiency of species, locally in Norway. The design project of this paper does not *solve* the vast problem of the changing conditions on our planet or the gap of species extinction. However, the design may inform and engage people through critical imageries and visual storytelling, possibly leading to engagement, commitment and action in the form of nudging, to restore threatened local species.

Discursive design is a framework intending to illuminate societal problems using critical design projects and design scenarios to evoke emotions which may lead to a change in how we as humans act (Tharp and Tharp, 2018). Design activism interacts with a local community by placing design in public spaces to interrupt daily routines and engage audiences. The discursive design project “Missing Species” is placed in a public space to reach out to people who may unknowingly, engage in the problem of biodiversity, invasive plants and plant extinction in Norway. The activism approach, staging in public space, is discussed as opposed to discursive and critical projects often presented in galleries, books, websites or conferences, mostly visited by designers (Laranjo, 2015; Prado, 2014; Prado & Oliveira, 2015; Tonkinwise, 2015; Ward, 2019). The paper explores the role of visual communication based on a scenario within the frameworks of discursive design and design activism and enquires into; *how can design activism be part of a discursive design process to make people aware of plant extinction in their neighbourhoods around the Oslo fjord?* Through the design project “Missing Species” we suggest that a combination of the two frameworks of discursive design and design activism may be profitable. We propose the term *discursive design activism*.



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The paper proceeds as follows: First, the design projects biological context and the main theoretical aspects are unpacked. Subsequently, the design case within discursive design and design activism is presented. Finally, a discussion, including a model, of how discursive design may find a targeted audience that may engage and act on the issue of biodiversity within a local context through design activism.

The conclusion reflects on the importance of discursive design being present where the target audience is, through *discursive design activism* and the importance of appealing to emotions and behaviour around the severe issue of biodiversity and the missing species.

CONTEXT

ANTHROPOCENE AND BIODIVERSITY IN THE OSLO FJORD AREA

To understand the biological background of the "Missing Species" design project, this section aims to provide an overview of the issue of human activity's impact on species extinction and the spreading of alien species in the Oslofjord area,

The Anthropocene is a suggested current geological epoch, in which humans are the primary cause of permanent environmental change (Chernilo, 2016; Seddon et al., 2016; Ellis & Ramankutty, 2008; Ellis, Antill & Kreft, 2012). Human populations and use of land have, over time, altered the global ecosystems causing extraordinary changes in biodiversity where native species are driven to extinction and domestic and exotic species are established (Ellis, Antill & Kreft, 2012). More than 75% of the planet's terrestrial biosphere shows evidence of change because of human activity and how the activity is rivalling nature in shaping the terrestrial biosphere and its processes (Ellis & Ramankutty, 2008; Sala et al., 2000; Pimm et al., 1995; Chapin et al., 2000). Global changes in biodiversity and the rate of species extinctions are accelerating. The average diversity of native species in land-based habitats has fallen by 20% (Ipbes, 2019). These negative changes in biodiversity are influencing our global ecosystems and will also affect humans. The changes in biodiversity will undermine 80% of the assessed targets of the UN's Sustainable goals related to poverty, hunger, health, water, cities, climate, oceans, and land use. Loss of biological diversity, therefore, proves to be, not only an environmental issue but also a developmental, economic, security, social and moral issue. (Ipbes, 2019).

In Norway the government has pledged to halt the loss of biodiversity through the Norwegian National Biodiversity Action Plan, (Meld. St. 14 2015-2016). According to Olsen et al. (2018) the best way to

conserve native biodiversity is to preserve their habitats. "Hotspots" for biodiversity, defined as habitats that house several threatened species are considered the most effective preservation (Myers, 1988). One important hotspot for endangered plants in Norway is situated in the most densely populated areas around the Oslo fjord. Human activity and land use are likely to threaten the endangered plants in this area if their habitats are not preserved. Other human activities threatening biodiversity involve land-use changes, pollution, resource exploitation, and invasive species (Ipbes Report, 2019).

Invasive species are defined as species introduced outside their natural past or present habitat. If the species become problematic, they are termed invasive and alien (IUCN, n.d.). Most alien species are introduced to Norway due to human activity, either unintentionally as stowaways with other imported goods, or as deliberate introductions by garden centres and nurseries. The southeast parts of Norway and around the Oslo fjord have the largest amount of alien species in Norway (Gederaas et al., 2012). When a garden plant becomes too big or unwanted, there is a common practice to throw it out of the garden. This way the alien plant ends up in new places for instance along roadsides, woodland edges, and edges of beaches where it starts spreading (Elven et al., 2012). The species' invasions tend to displace and exceed native plant losses. In total, plant species richness has increased overall in most regional landscapes as the increase of invasive plants is larger than the loss of vulnerable native plants (Ellis, Antill & Kreft, 2012). In Norway, prior garden plants such as Canada Golden Rod (*Solidago Canadensis*), Japanese knotweed (*Fallopia Japonica*) and Beachrose (*Rosa Rugosa*) are found in large quantities areas around the Oslo fjord (Often & Stabbetorp, 2010).

A new interest in nature is emerging among designers worldwide. These interests are rooted in the desire to both protect the planet and to be inspired by it. This is done by exploring creativity through materiality, technology, communication, and ethical principles. Examples are initiatives such as biodesign: how design and (bio-)science can cooperate in creating new possibilities within design (Myers, 2012), biomimicry: how to mimic nature's principles in design (Benyuys, 2002), synthetic design: designing new species and recreating extinct species by art and design (Ginsberg et al., 2017), bio-art: use of living organisms and biological material through biotechnology to create art (Anker, 2014; Hauser, 2017). These frameworks all involve design in combination with biological elements, but the *intention* of the projects may differ. Biodesign and biomimicry are related to product development using, or inspired by natural resources, while the

intention of bio-art and synthetic design may be more experimenting aiming to engage and provoke to generate reflections and discussions, which is also the intention of discursive design.

DISCURSIVE DESIGN

Discursive design is one of a growing number of frameworks for designers, using scenarios to facilitate a mental process that unlocks people's imagination to trigger discussions, and for design to be a catalyst for change. Other important frameworks using design by scenarios are critical design and speculative design. (Malpass, 2017; Dunne & Raby, 2013) The disciplines originate from areas such as radical architecture in the sixties and seventies (Elfline, 2016), and anti-design in the eighties (Papanek, 1985; Rynning, 2017). Through mechanisms of estrangement, time spent with the object presenting a pressing issue may be extended (Dunne, 2008; Malpass, 2013, Rynning & Skjulstad, 2017). Malpass (2017) describes that critical design has the role of designing the discourse within critical thinking and draws on Tharp & Tharp (2008) explaining that the main intent of discursive design is to encourage users' reflection of a particular discourse to affect the intellect. Tharp & Tharp (2018) explain the intention of discursive design projects as creating new thoughts that positively affect human behaviour and public debate to be a spark for sociocultural transformation as the audience reflects on how things could be. Discursive design is using design as an "intellectual prosthesis" where the aim is to create products communicating ideas to incite thoughts, reflection, and discussion (Tharp & Tharp, 2018). Drawing on Foucault (1972), discourse is defined as a system of thought or knowledge, and discursive design is situated as discourse-through-design, objects that enable or contain communication (Tharp & Tharp, 2018). Discursive design is not required to be critical, though discursive projects often are. Discursive design is suggested to encompass a wide range of frameworks such as critical design, speculative design, design fiction, adversarial design, interrogative design, anti-design, radical design and reflective design, all frameworks concerned with the intellectual impact of design. This way discursive design operates as an umbrella concept for the other approaches (2018, p. 344).

An important model within discursive design is *the nine facets*, explaining the process of a discursive design project. The nine facets consist of; intention (problem finding), understanding (research), message (what to say), scenario (future narrative), artefact (the design), audience (to whom), context (how to disseminate), interaction (how to connect) impact (effect) (2018). These stages outline how the discursive designer first finds a relevant problem, designs a product, and adapts how the product may communicate with the audience.

A significant purpose of discursive design is how to connect with the audience. Still, discursive design projects are often presented in galleries, in college situations, in books or in conferences and not always in areas where the target group is. However, there are exceptions such as the "Homeless Vehicle" by Krzysztof Wodiczko and the "Whithervanes" by Rootoftwo (2018). Projects like these are also related to design activism.

DESIGN ACTIVISM

Design Activism is a disruptive aesthetic framework using design in public space to interrupt daily routines and make audiences engage in social, economic, and political issues (Bieling, 2019; Fuad-Luke, 2009; Julier, 2013; Markussen, 2013). Transgression is an important part of design activism. The activism intends to challenge the status quo while enabling long-term impact where the activists consider ethical issues which may underpin and inform future societies (Jordan, 2001; Zajzon et al., 2017). The desired audience may be people with the power to change a situation, or those affected by the problem, to create engagement and action. Design activism aims to be where the audience is. It can be performed in the street in a city, in front of a building or as a participatory design where those influenced by a problem are designing (Zajzon et al., 2017). Design Activism intends to be close to the problem highlighted through design. Design activism combines objects and aesthetics and allows the visual to appeal to people's emotions, in public space. Designed products within design activism are consciously placed close to a target audience. Thorpe (2008) defines design activism as "taking intentional action to instigate change on behalf of a neglected group" and explains that neglected groups also encompass less recognized "groups" such as the earth's ecosystem. Designers themselves may be activists or "activists for hire" as designers can help people imagine through visualization (Thorpe, 2008).

Designed prototypes as boundary objects may represent disruptive aesthetics as a designerly way of communicating an issue. Boundary objects are objects that are adaptable across multiple viewpoints, but still, maintain continuity of identity (Star & Griesemer, 1989). The object is the stable element that different people can use as a unifying element which allows them to discuss something with a common base (Ewenstein & Whyte, 2009).

The frameworks of discursive design and design activism have some overlaps. Both aim to engage the public in social or political issues through design projects. However, discursive design often focuses more on the design product as a boundary object and not so much on *where* to reach out to the targeted audience.



The discursive projects often end up as examples of what design can do, in galleries, instead of actually reaching out to the project's target group as design activism does. Design activism, on the other hand, is more concerned with *where*, and what it takes to reach the public and is therefore willing to be more extreme to influence them. Within design activism, the need to reach the right people can come at the expense of the craftsmanship in the design, which is often given a higher priority within discursive design. Based on this knowledge, we suggest that a combination of the two frameworks of discursive design and design activism may be profitable. The theoretical frameworks of Anthropocene and biodiversity in the Oslo fjord Area, Discursive design and Design activism are all important parts of the "Missing Species" case study presented below.

METHOD

This section of the paper introduces the case study as well as a method of implementing a discursive design project into design activism.

DEVELOPING THE "MISSING SPECIES" CASE

The design project, "Missing Species", was developed to act as a discursive design object to communicate local biodiversity. The design case relates to the nine facets of discursive design: intention, understanding, message, scenario, artefact, audience, context, interaction, and impact. The facets are incorporated into the case and methods and are not presented individually.

One major threat to local biodiversity around the Oslo fjord is the spreading of alien invasive species (Often & Stabbetorp, 2010). Japanese knotweed (*Fallopia Japonica*) is one of the largest and most spreading invasive plants in the area. It creates large thickets and displaces all other plants where it settles. The design project "Missing Species" uses the invasive plant Japanese knotweed as the base material to shed light on the plant extinction Japanese knotweed causes. Handmade paper was made from the fibres of the plant. Making handmade paper is a comprehensive process that requires cooking, hammering, and chopping to split the fibres before distributing them in water and scooping them up by a screen. Further on the fibres must dry to form a flat sheet.



Figure 1.: The making of the Japanese knotweed paper. From top left: the plant Japanese knotweed, chopped stems, cooking stems, hammering stems to soften them, chopping in blender, scooping the pulp onto screen, drying the Japanese knotweed paper, and finally cutting the holes of the missing species. Source: the author.



Figure 2.: The finished artwork of the handmade Japanese knotweed paper with cut-out holes of endangered species. Source: the author.

The Japanese knotweed paper was juxtaposed with local endangered species. Holes in the shapes of endangered species were cut out of the Japanese knotweed paper, representing how the local species are likely to be supplanted by invasive exotic garden plants such as the Japanese knotweed. The empty space where the local plant was supposed to be, is seen as an absence, a blank

space, something which is no longer there. The holes are shaped as the vulnerable native plants, in danger of extinction; Speedwell (*Veronica Spicata*), Longstalk Cranesbill (*Geranium columbinum*), Cotoneaster laxiflorus, Lady's Slipper (*Cypripedium calceolus*), Elm (*Ulmus glabra*) and European Crab Apple (*Malus sylvestris*).



Figure 3.: The endangered plants of the artwork. From top left: Cotoneaster laxiflorus, Crab apple, Longstalk Cranesbill, Lady's Slipper, Elm and Speedwell. Photo: the author, Kjell Værnes (Lady's Slipper) and SNL (Longstalk Cranesbill).

FINDING THE RIGHT AUDIENCE

How and where to find the right audience, the people willing and able to engage in the local biodiversity issue was an important question. The “Missing Species” was not to end up as “design-for-designers” in a gallery. Another question was whether the design was enough to convey the message or if there was a need for additional communicative elements. The target group was found among hikers along the coastal path outside of Larvik, a city along the Oslo fjord. Many of these hikers own cottages and summer houses along the coastal path. The cottages have been in their families for generations, and they really care for and love being in the area. The density of vulnerable local species in this area was high according to the Artsdatabanken map, a map from the Norwegian species databank (Artsdatabanken, n.d.), and the invasive “garden” plants were visible in many places. The designed artwork was exhibited along the Oslo fjord coastal walking path, attached to living plants of Japanese knotweed. Along with the artwork, there was a plaque with information about the project, the plants, and the problem of biodiversity in the local area.

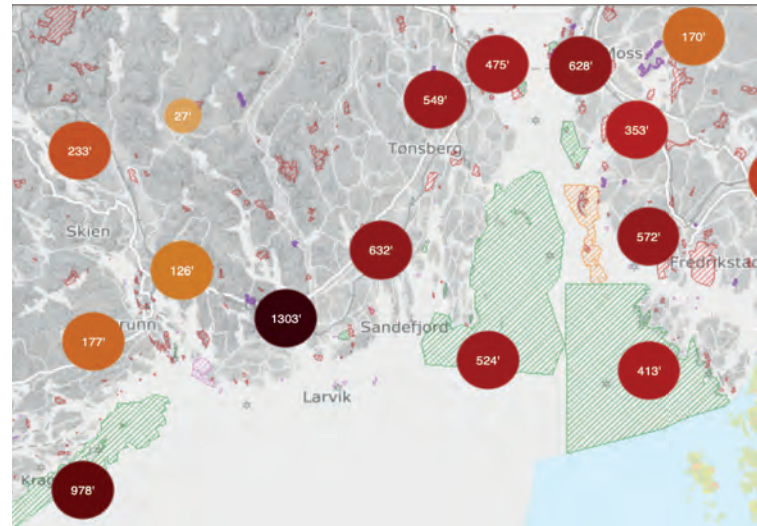


Figure 4.: Map displaying the number of vulnerable and threatening species in each area according to the Norwegian Species databank, Artsdatabanken. The area around the city of Larvik has the highest number of vulnerable and threatening species in the region. Source: Artsdatabanken.



Figure 5.: Hikers studying and discussing the “Missing species” artwork displayed on a shrub of Japanese knotweed. Source: the author.

This text was displayed in Norwegian together with the visual art:

“Missing Species

Most of us are aware of some local endangered animals such as lynx and wolf, but do we also know any endangered plants? Speedwell, Longstalk Cranesbill, Cotoneaster laxiflorus, Lady's Slipper, Elm and European Crab Apple are all endangered plants in the Oslo fjord area. An important threat to these species is the overgrowth and displacement by other species. The plant Japanese Knotweed was originally imported to Norway as a garden plant but is now spreading so that it displaces our native species. The artwork displayed here is handmade paper made from the invasive Japanese Knotweed plant, with holes shaped from some of our endangered native plants. It visualizes the loss the native plants will impose on our ecosystem if completely suppressed.”

The text was informative and did not tell people what to do. Using the coastal walking path, local hikers and garden owners were introduced to the “Missing Species” artwork with information about the project and the issue of invasive plants in the Oslo fjord area. The design activism took place on Saturday 21. August 2021. It was a sunny day with many hikers. Mostly adults between the ages of 25-75 walked in groups of between two to ten people. Many of the hikers were families and some were also walking with their children. The designer was present in the space discussing local biodiversity based on the “Missing Species” artwork with the local hikers. The discursive design object “Missing Species” functioned as a boundary object, making the hikers stop and ask questions. Questions about how the handmade paper was made, lead to questions about the material it was made from, and further to questions about the invasive plant, Japanese knotweed which the artwork used as a backdrop and suspension system. The 2-3-meter-tall Japanese knotweed was completely blocking the ability to enjoy the view of the seascape from the exhibition site and was a visual statement of the problem. At the site, there was no space for small native plants where this giant was residing.

The result of this activism cannot be measured in numbers. However, it turned out that very few of the hikers experiencing the “Missing Species” activism knew about the issue of invasive plants in general and that this was a major problem in their local area. Few of those who knew about invading plants knew the names of the plants and what they looked like. None of the hikers was familiar with any endangered local species and the problem of throwing unwanted garden plants on roadsides, woodland edges, and edges of beaches where they may start spreading. In fact, they were grateful to get information and wanted to discuss the issue to get to

know more about how they should behave and what they could do to protect their local biodiversity and stop the spreading of invasive plants.

As a result of the "Missing Species" design activism, discursive design was brought to the audience in their surroundings and some local people became familiar with the issue of biodiversity in their area and claimed to be willing to engage in the problem personally.

In the next paragraph, the importance of reaching out to the right audience with discursive projects is discussed and a theoretical model of *discursive design activism* is proposed.

DISCUSSION

DISCURSIVE DESIGN ACTIVISM

One important purpose of discursive design objects is to interrupt the expected and make people reflect, either on their behaviour patterns or on society's (Tharp & Tharp, 2018). The nine facets of discursive design explain the process of developing a discursive design and include the importance of the audience, context, and interaction with the audience. However, *where* the projects are presented is not emphasized enough. Tharp & Tharp, (2018, p. 236) explain “designers often suffer from the overly hopeful posture of ‘design it and they will come’” and suggest that designers should consider their audience. Projects like the “Missing Species”, where the target audience is not likely to be found within common places to showcase designs, may need to find other ways of meeting the audience. We propose *discursive design activism* as a new space, a new way to understand the case study. When discursive design and design activism are merged, both are strengthened and become something more than the sum of the parts, hence the need to call it *discursive design activism*. Design activism is suggested as a framework to use with the nine facets of discursive design to reach out to targeted audiences, as both frameworks have similar purposes; to create a disturbance in people’s daily routines, and to make them aware and engage in social or political issues (Markussen, 2013; Thorpe, 2008). The main difference is perhaps the venue where the interferences are presented. Critical, and discursive designs are often presented in galleries or design- and art-related contexts where the audience is expected to find projects like these. Whereas design activism, as a method, is more of an activity in public space, taking the audience by surprise. Considering the ongoing discussion of critical and speculative designs being designed *for* western designers *by* western designers, exhibited in galleries to receive confirmation as designers (Laranjo, 2015; Prado, 2014; Prado & Oliveiro, 2015; Tonkinwise, 2015; Ward, 2019), the aim of the “Missing Species” was quite different. Instead of



presenting the “Missing Species” in a gallery where people primarily interested in design consciously would come to see it, the design project was displayed in an outdoor recreational area along the Oslo fjord where the biodiversity problem was visible and the audience, presumably caring for the local area, would observe and relate to the biodiversity issue through design. The action was not a loud stunt of activism which would not have worked in this calm area of recreation, but still, it was an interference of what was expected in this place. It was presented as a surprise intended to make the observers curious (Luna & Renninger, 2015). Markussen (2013, p. 38) claims that, in design activism, “The design act is not a boycott, strike, protest, demonstration, or some other political act, but lends its power of resistance from being precisely a *designerly* way of intervening into people’s lives”. The design intervening has the potential to open the “relation between people’s behaviour and emotions —between what they do and what they feel about this doing” (2013, p. 39). The discursive design object “Missing Species” functions as a boundary object in which the concern is looped with everyday practice (Julier, 2013). In this case, the everyday practice is hiking and enjoying the local nature. Being influenced when hiking, which is one of Norwegians’ most traditional activities of recreation, may be demanding. In a way, Norwegians’ relationship with nature is the last non-commercial post, almost a sacred place. However, along this hiking trail, there are informational signs about local history, culture, and nature that hikers find enjoyable to read and discuss as they walk. The strength of this biodiversity design project of missing species may be that it did not *appear* as an aggressive commercial message trying to convince the recipient. According to the local audience, it was perceived as a surprising interruption and the aesthetic values made people want to relate to it.

This contribution to the development of discursive design suggests adding design activism to the process of the nine facets when needed. Considering the exhibition site may be crucial in situations requiring a specific target group or a specific issue, like biodiversity. An extended model of the nine facets emphasizes the importance of all the elements of the nine facets; intention, understanding, message, scenario, artefact, audience, context, interaction, and impact, and also implements how to showcase the discursive design artefact in public space, inspired by design activism. In this model, the first five facets; the intention, the understanding, the message, and the scenario will be executed as in most discursive design projects to produce a well-founded and communicative design artefact, which may function as a boundary object to the audience. However, the three next facets that determine the audience, context and interaction can benefit from

design activism to achieve the desired effect of the design to create an *impact*. Design activism may contribute with essentials such as artefacts being presented close to the audience, in a public space, close to the question of scrutiny and also including the designer as a discussion partner. Elements of design activism in a discursive design project may serve as a counterbalance to the “design it and they will come”-mentality of galleries. Design activism aims to be performed where the target audience is, approaching those affected by the problem or those with the power to change the situation. The designer’s presence as an activist can be a reinforcement of the design

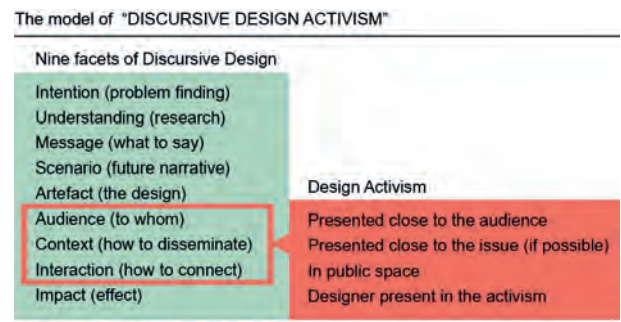


Figure 6: The model of “discursive design activism”. The nine facets of discursive design (Tharp and Tharp, 2018) are supported by design activism elements to reach a larger audience. *Source: Author*

interference as designers can help people imagine visually (Thorpe, 2008). We are suggesting that the “Missing Species” would not have gotten the same attention and reached out to the local people in a design gallery. The presence of the invasive plants in the outdoor exhibition area was “proof” of the huge problem of intrusive garden plants, such as Japanese knotweed, in the wilderness. And also, the lack of smaller local vulnerable plants. It made an impact and made people interested in participating and engaging in the local issue of biodiversity and invasive garden plants. In galleries, images or prototypes could have given some of the same experience, however, being able to touch and see the extent of the problem in the wilderness may activate more human senses and create a stronger impact. Also, in galleries, there may be competing projects and the audience may be more interested in the design than in the issue it communicates.

The design interference would presumably not have created the desired level of knowledge on its own without the personal sharing of information. Being present in the stunt of activism and discussing the issue of biodiversity allowed the audience to ask questions and learn more than they would have gotten by just seeing and experiencing on their own. This way the “Missing Species” is not only a piece of discursive

design, presented in the field as design activism but also a personal message. Having to relate to the designer creates a more intimate aspect of the act, giving the audience a face to relate to in addition to the designed objects and the plants surrounding it.

Picking and using an invasive plant can be problematic, considering what might happen to the plant-generated product if it returns to the earth. On the other hand, if the Japanese knotweed product does not end up in nature again, it can be a positive material that uses artistic ways to communicate and engage the local audience.

This project does not suggest that discursive projects never reach the public nor that they are never displayed in public spaces. It proposes that elements of design activism in discursive design can provide a fruitful combination and raise awareness of the importance of how the designer can consciously reach out to a larger or targeted audience via *discursive design activism*.

CONCLUSION

The suggested Anthropogenic epoch (Chernilo, 2016; Seddon et al., 2016; Ellis & Ramankutty, 2008; Ellis, Antill & Kreft, 2012) and the way humans have – and are altering the planet have caused accelerating extinctions of species and change in biodiversity all over the globe, creating gaps leading to a change in ecosystems (Ipbes, 2019). Designers and artists hold a unique aesthetic approach enabling people to relate emotions and behaviour (Markussen, 2013). The design project “Missing Species” draws on discursive design (Tharp & Tharp, 2018) enabling a mental process to trigger discussions and be a catalyst for change. The activist approach and the presentation of the “Missing Species” project in a public space where the biodiversity issue is visible, is suggested to create a greater impact and meet more people willing to engage in the issue locally, than if presented in galleries.

Based on experiences from the “Missing Species” project and practice within discursive design, a theoretical model is proposed in which design activism supports the nine facets of discursive design. The model shows how design activism can help discursive design projects reach a larger audience and suggests the new term *discursive design activism*.

The framework of discursive design, consciously drawing on design activism, may be further explored and developed in other projects to meet a more targeted audience. For instance, our next project within discursive design activism problematizes the over-picking of wild garlic in nature reserves around Oslo. This ongoing research will give more emphasis to the concept of *discursive design activism* and place the Missing Species project in a larger context.

The “Missing Species” project may also be repeated in other areas aiming to meet more engaged local people and societies.

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CRAFT AS A MATTER OF CARE TO INSPIRE THE DESIGN OF COMPUTATIONAL THINGS

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ABSTRACT

Craft, the skillful process of turning materials into artifacts, bears many similarities with interaction design as a practice of giving form to computational materials. Zooming into the studios of five craftspeople and through interviews with them, we unfold stories of the joys and struggles they encounter in their practices. Departing from these, we unpack and discuss how craft is a matter of care, using the notion of care by de la Bellacasa. We argue that the dual movements of care in the making and through the artifact are linked and that the ability to generate care through artifacts comes from the care with which they were made. We end with three suggestions of how craft as a matter of care can inspire the design of computational things, formulated as questions that invite reflection and suggest paths to designing technologies with a care commitment.

INTRODUCTION

Industrial design and design of computational things is typically part of a capitalist innovation culture (cf., Escobar, 2018). A culture where obsolescence is planned and designed to achieve a quick turnaround. A

culture where we keep our phones for two to three years on average (Statista, 2023). A culture where technological things are rarely ascribed with meaning and value beyond their immediate use (Odom *et al.*, 2009). What if that was different? What if we cared enough about our artifacts to repair them and use them for longer before we replace them? We know that this is a complex issue involving rapid technological developments and that there is no easy fix for this. Still, we believe there could be value in seeking inspiration from more traditional craft practices and finding ways for this to inform the way we design computational things.

Craft refers to a skillful process of giving form to materials to transform these into a new entity, being a utility artifact (i.e., clothes, kitchenware) or a new configuration of matter for decoration or adornment (i.e., jewelry) (Shiner, 2012). A craft process involves using tools to manipulate materials in an orchestration of the craft person's aim, skill, experience, and judgment (Sennet, 2009). Building computers and developing software has always carried a kinship with craft if not labeled directly so (Papert & Harel, 1991; Nardi, 1993; McCullough, 1998; Blauvelt *et al.*, 1999). The rise of physical, tangible, and material computing has only strengthened the notion of interaction design as a craft (Fitzmaurice *et al.*, 1995; Ishii & Ullmer, 1997; Greenberg & Fitchett, 2001; O'Sullivan & Igoe, 2004; Redström, 2005; Vallgård & Redström, 2007; Bdeir, 2009; Baskinger & Gross, 2010; Robles & Wiberg, 2010; Vallgård & Sokoler, 2010; Belenguer *et al.*, 2012). Claiming interaction design as a craft or at least as a practice with a strong dimension of skilled form-giving of physical and digital materials is straightforward today (Fernaes & Vallgård, 2014; Golsteijn *et al.*, 2014; Tsaknaki *et al.*, 2014; Vallgård,



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2014). However, unlike well-crafted non-computational things, computational things remain in a context or category of things we appreciate for their function. They are artifacts we are ready to replace when a new version comes along (Odom *et al.*, 2009; Droemann, 2021).

In this paper, we use a series of material craft practices as a lens to understand what we are still missing when we craft computational things. We zoom into the studios of five craftspeople, and through interviews, we unfold stories of the joys and struggles they encounter in their practices. We unpack and discuss how craft is a matter of care using the notion of care presented by de la Bellacasa (2011). We argue that the care with which the craftspeople craft their artifacts enables the future owners to build affective relations and thus care for the artifacts in return. We argue that the crafted artifact helps generate care. We also argue that the craftspeople care for the environment through their materials and ways of crafting for aesthetically and physical longevity. Finally, we present three suggestions of how craft as a matter of care can inspire the design of computational things. These are presented as questions that invite reflection on what interaction design and design of computational things can learn from the craft practices, suggesting paths to designing technologies with a care commitment.

BACKGROUND: INTERACTION DESIGN AND CRAFT

Combining interaction design with different traditional craft practices has led to new expressions inviting new functionality and richer user experiences (Hallnäs & Redström, 2006). Combining interaction design with glass and ceramics, for instance, has invited sculptural objects or objects fitted for domestic aesthetics (Schmid *et al.*, 2013; Rosner *et al.*, 2015; Homewood *et al.*, 2019). Others have explored the qualities of textiles (Berzowska & Coelho, 2005; Ernevi *et al.*, 2005; Perner-Wilson *et al.*, 2010; Worbin, 2010; Nilsson *et al.*, 2011; Devendorf *et al.*, 2016; Bell *et al.*, 2021), paper (Coelho & Zieglbaum, 2011), wood (Vallgård, 2008; Odom *et al.*, 2018), leather (Tsaknaki *et al.*, 2014), and precious metals (Tsaknaki *et al.*, 2017; Koulidou *et al.*, 2019), each material and craft practice bringing something new to the expressions and thus forms of interaction. Some of these projects have the ambition of sustaining use and value over time by consciously drawing on the aesthetics of wear and tear (Rosner & Taylor, 2011; Tsaknaki *et al.*, 2014; Tsaknaki & Fernaeus, 2016; Odom *et al.*, 2018). Others have aimed at bringing some of the specific material qualities into the interaction, like Rosner *et al.*'s (2015) *Sound Bowl*, a ceramic vessel designed to record an

audio message through surface undulations similar to a vinyl record. These are all ways of working with different material crafts to bring out specific and intriguing material qualities. Craft, however, is more than bringing out the material qualities in an artifact, as we will show in this paper.

Another engagement interaction design has with craft is through its tradition of mending, restoration, and repair. Rosner and Taylor (2011), for instance, looked towards restoration bookbinding as a lens to understand why technologies are so easily replaced, while some books inspire restoration and point to aspects such as authenticity. Similarly, Ikemiya and Rosner (2014) looked at *kintsugi* and the art of repair as adding value and as a source of inspiration to understand how we might reframe our relationship with interactive artifacts.

Finally, in a bit of an opposite move, interaction design has engaged with craft by developing new digital fabrication technologies that are moving away from or adding to traditional craft practices. These are often called *digital craftsmanship* or *hybrid crafting* (Efrat *et al.*, 2016; Jacobs *et al.*, 2016). Here projects are driven by experimentations of combining different materials and digital fabrication tools such as a laser cutter, a 3D printer, or a CNC mill, as shown or discussed in (Zoran, 2015; Saegusa *et al.*, 2016; Frankjæer & Dalsgaard, 2018).

Previous research studies highlight how craft can inform ways of treating materials in making practices, including long-term engagement with artifacts. In this paper, we unpack how craft can be cast as a matter of care. We then discuss how this can inspire designers of computational things to care about other dimensions of their practice, such as how to develop socio-material ties with the computational things we design.

METHOD: INTERVIEWING CRAFTSPEOPLE

We interviewed five craftspeople in their studios to understand their practices, values, and concerns when they make things. We used a snowball sampling method for recruiting all participants, and the first was recruited through a colleague (Heckathorn, 1997). We approached craftspeople through social media and explained the aim and content of our study before inviting them to participate. We deliberately recruited participants within different craft practices, some making utility artifacts and others making artifacts for adornment or artistic expression. All interviews were conducted in English for all authors to be able to participate in the study. Our criteria for participation were: a) to have many years of experience in a particular crafts domain, b) to currently practice craft for a living (either as the main occupation or as a



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secondary one) as opposed to having craft as a hobby. This was important since we wanted to dig deep into the crafts' everyday complexities and tensions as a practice and profession.

We interviewed one ceramicist, a goldsmith, two cabinetmakers, and a textile crafter. We interviewed them about their practices, routines, values, and concerns. All their studios are located near the authors enabling us to conduct the interviews in situ. Each interview lasted approx. 60mins. The interviews were sound recorded and later transcribed. The studios, tools, and specific aspects of their practices (like recycling procedures) were also documented through photographs. Both authors analyzed the interviews using reflexive thematic analysis, meaning a process of "reading, reflecting, questioning, imagining, wondering, writing, retreating, returning" (Braun & Clarke, 2021). We did not start with a lens of care; rather, it emerged as a useful lens to later analyze and reflect on the nuances, values, and concerns of the craftspeople's practices as they were presented to us.

Table 1: List of craftspeople and their practice

	shop. Primarily making ceramic tableware. Has been working as a ceramicist for 10 years.
	manual knitting machine. Sells her products online and in craft markets. Has been working as a textile designer for 10 years.
cabinetmaker A	female, has her own studio, together with a partner. They make both utilitarian furniture and art pieces for exhibition. She is also teaching cabinetmaking in an apprentice school. Has been practicing her craft for five years.
cabinetmaker B	Male, has his own studio. Makes custom-made furniture based on specific orders. Also exhibits more unique pieces in exhibitions and arts & crafts fairs.
goldsmith	Female, has a downtown studio in the basement and a shop on the ground floor together with her partner. They make custom and ready-to-order jewelry from fairtrade Gold. The

PRACTICES, VALUES, AND CONCERNS IN CRAFT

The five craft practitioners we interviewed were different in the materials they worked with, their audiences, and the complexity of their craft. Still, they also overlapped in aspects such as how they thought about experimenting, their relationship with their products, and their pride in their expertise. In this analysis, we will draw out where they overlap and differ.

All craftspeople presented different approaches to making openings for future owners to build long-lasting relations with the artifacts. One was through crafting artifacts that would last beyond a generation. Here they emphasized the quality of the craft and materials combined with timeless expressions that referenced something familiar and added something new. Another approach was to craft expressions that exhibited what they called *cleverness, imperfections, or intrigue* as invitations for the owners to engage and explore. They were also committed to constantly developing their skills and pushing the boundaries of their craft through experimentation. Finally, the craftspeople were committed to using quality materials, reusing them where possible, and sourcing them as environmentally friendly as possible.

Below we will present each of these emerging themes in more detail, drawing on examples the craftspeople used to highlight aspects of their practices and materials,



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tools, and crafted artifacts they showed us in their studios when explaining their approaches to crafting things.

DESIGNING FOR LONGEVITY

The Goldsmith and the two Cabinetmakers all talked about how their ideal was to find a balance between a unique expression and something recognizable in their products, between a contemporary expression and something that can outlast the generation. *“Something we’re trying to design for in our practices is the in-between factor of having something that has a narrative and is your own thing, but also something that has this more universal approach where people see it, and they understand it immediately.”* (Cabinetmaker A)

The Goldsmith gave an example of her process: *“[W]e have this really nice customer who comes every year and buys a little thing for his three daughters. And now he wants to give them a bigger thing. Because he got some money from his mother, who died, and all her jewelry was stolen. (...) And you know, a lot of times there is a talk about what they would like but also what’s cool in the long term. You know, what is nice on you when you’re 80? You know, what would you really wear? It’s not that it has to be boring. It’s not about that. But it’s also about lasting, lasting design, really. (...) If you look into a thing now that it’s too trendy, then you’ll get bored of it.”* (Goldsmith). The Goldsmith attempted to forego fashion trends by deliberately avoiding services like Pinterest and Instagram and had instructed her interns to do the same. She even stopped producing one of her designs when it got picked up by others and thus became a trend.

Cabinetmaker B designs for longevity by combining classic midcentury furniture references with intriguing and highly durable upholstery materials. For example, he used horse hair upholstery for the seat and the intriguing salmon skin for the backrest (See **Error! Reference source not found.**). *“When you sit, you can touch it, and you will recognize the nature of the material. (...) It is an old way of upholstering chairs, and it’s very durable. I saw a chair upholstered with horsehair that was 200 years old, and you couldn’t see any damage or marks on the horsehair. It is very, very durable and very pretty.”* (Cabinetmaker B). In this example, he stressed the importance of the tactile qualities and unique characteristics of making good quality products by combining old different materials and crafting techniques.

Avoiding trends is, however, different from not developing their expressions. They all did so through experimenting to improve their skills but also aiming to create more intriguing and better-quality artifacts.



REFINE THROUGH EXPERIMENTATION

All five craftspeople engaged in experimentation within their craft as a way of keeping themselves intrigued, and some also to push the boundaries of their craft. Some were free to experiment because their materials and productions were less expensive (i.e., the Ceramicist and the Textile crafter). In contrast, others had to apply for art and craft funding or get art commissions to have room for experimentation (Cabinetmakers and Goldsmith). For all, experimentations were crucial for developing new expressions also in their commercial products.

The Ceramicist expressed how she kept playing with different compositions of her glazes. *“I make my own glazes and experiment. I buy the raw materials, mix them with a mask, and test them. All these kinds of materials are in the glaze you see out there. Yeah, that’s a recipe. It’s grams of these raw minerals.”* (Ceramicist) (See **Error! Reference source not found.**)

Cabinetmaker B experimented with the boundaries of bending wood in the tradition of furniture maker Grete Jalk. *“There are different difficulties in how to bend (wood). I have done some bending before, but only very simple bends. So, I wanted to try to bend (a piece of wood) in two directions. I sketched a chair where the back is a veneer. But with armrests, bending the other way. So, I made a mold, where it was possible to put in the veneer parts and then put pressure on it and get these wings, “the rests” in the same bent.”* (Cabinetmaker B) (See Figure 1)



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PERFECTION, INTRIGUE, AND CLEVERNESS

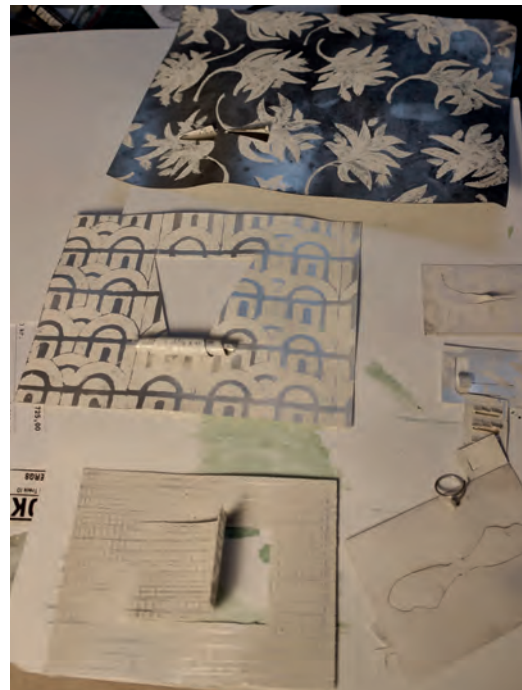
A third theme that emerged was the balance between perfection and intrigue in the intended crafted outcomes. All craftspeople expressed, in different ways, that if something is, or at least appears to be, too perfect, it loses its intrigue. Working with imperfections was deemed necessary by most as a means to develop intriguing expressions. We encountered three types of imperfections as either inherent in the material/production practice, as part of a mistake, or as something deliberately applied.

Cabinetmaker A gave an example of intended imperfections, deliberately applied when making something: *“I think it adds an element of inspiration or draws someone closer because there's something to it that you don't understand right away. There's something a bit mysterious somehow. You know the feeling of looking at something that's just perfect, and it's very nice and calm, but it's also maybe not as interesting. Maybe it doesn't touch you in the same way. So, I think maybe the fact that they are a little bit organic on the outside [pointing to the seat she made of hand-dyed paper yarn] adds an element of something surprising or something tactile, and maybe it's something that we can understand differently.”* (Cabinetmaker A)

The same Cabinetmaker A also expressed how unintended flaws or imperfections that can happen when making something can offer an “aha” moment for the craftspeople and also potentially for the owner of a crafted piece since such flaws can add an element of cleverness to the artifact: *“I think somehow, with all the*

surprising elements, or the flaws, things that happen along the way, it adds an element of cleverness because then you have to reflect upon the piece and see how ok, how can I work around this flaw and make it look integrated? Or as if it was part of the... like, always intended somehow, and I think that's what we lose in mass production.” (Cabinetmaker A)

The Ceramicist talked about imperfections inherent in the materials and production process of working with clay and the kiln. She described these (clay and kiln) as having agency, so she reflected on her practice as a process of deliberately creating something without being able to control the outcome fully. She considers this as bringing a kind of uniqueness to the crafted pieces, which people seek: *“Something happens in the kiln with the color (...), since, I mean, there are so many factors that affect the glaze. So, the layer, the thickness of the layer, where it stands in the kiln, if it's high or low or in the middle, or if it stands next to something else, that would also react on it. There are many unknowns.”* (Ceramicist). The Ceramicist also talked about mistakes or unexpected imperfections occurring during the making process as something expected and accepted, and which can add a new dimension to a design: *“Mistakes happen, and you use it for something else or see a new purpose or a new like aesthetical thing with that (mistake), which is nice. I think that happens a lot when working with clay.”* (Ceramicist) She showed us a vase she had made, in which an unintentional bend of the clay on one side resulted in an intriguing form that she kept in the final piece.



Imaginaries] __ [Materiality

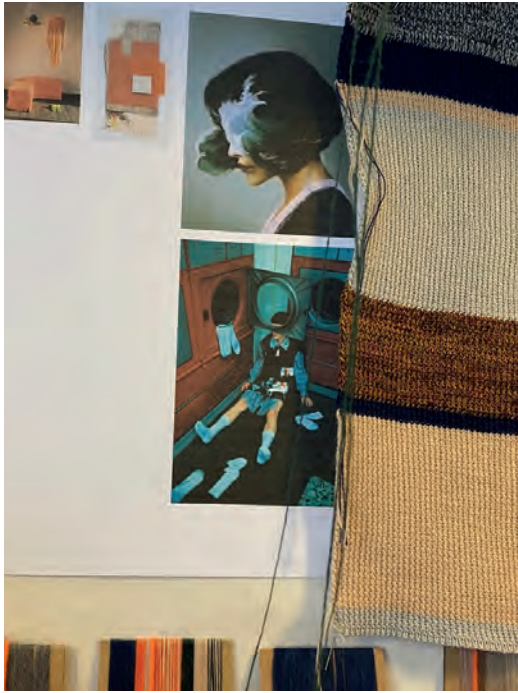


Figure 5 The Textile crafter's moodboard, thread samples, and knit samples in her process to develop an electric expression.

The Goldsmith approached this theme in the opposite way, in that she always strives for perfection, even in things meant to look accidental or casual. In one of her experiments, she explored the expressions of paper and paper scraps but done in fine silver (See Figure 4). Making them into broaches, she needed a hanging/lock that would look like someone made it at home, but it still had to be super precise. So, to make this simple hanging/lock, she made countless models exploring different ways of making it super accurate yet fit the narrative of being made by an amateur: “*And down here when you look at this, it doesn't look precise. But ask [the intern]; she knows we want exact things. So, it's a way of thinking in exact terms, so of course, we redo a lot. Even I had to make that over because we were not satisfied. So, often when being melted again, nobody but us can see it. You know, that's what you're learning (when practicing craft). And that's a skill in the craft. And it takes just hours and hours and hours and hours.*” (Goldsmith)

This is a different way of working with the cleverness of the expression. It is not mistakes or imperfections in the materials or production but deliberate and super precise nuances that – to an untrained eye – appear as the surprising wrinkles or cracks keeping the viewer's interest. The combination of perfection and imperfection becomes a strategy to maintain the interest and quality of the product.

The Textile crafter explained how she carefully chose colors and materials that worked for her and had an element of *electricity*: “*I am trying to find some interesting colors that create some kind of energy. I think, Oh, that's an exciting meeting between colors. And then from there, I go to knitting [the chosen color combinations], which is amazing.*” (Textile crafter) Each pillow design is based on a moodboard of photos and illustrations that express an often-sinister atmosphere. Based on this, she finds yarn samples and other elements that she spent a long time compiling to make intriguing color combinations for her knitted pillows. (See Figure 5)

MATERIALS AND ENVIRONMENTAL SUSTAINABILITY

All craftspeople talked about their relationship with materials and how they are careful not to waste any for economic and environmental reasons. The Textile crafter tried to use what materials she already had “*I try not to buy more but to use what I have [talking about yarns] because it doesn't make sense when I have so much, to start buying more. I also applied for a scholarship to visit the yarn factory in Italy to learn more about the materials. I tried to change my yarns to get [a local environmental certification].*” (Textile crafter)

Similarly, the Ceramicist reused leftover clay. “*There will always be leftover clay [after making something]. So, you can put it in buckets, and put water on and then remove the water from the clay after - like this, water on the top. And then, I will put all of this onto a plaster plate. Then it will dry a bit, and I can wedge it again. It's a long process with recycling clay.*” (Ceramicist)



The Goldsmith presented a project where she treated plastic as a precious material. She had taken the plastic wrap from a candy bar and treated it like a precious material with engravings. Imagine “if we did the same with every material, like if you're putting it on, then we could take care and develop big love for this really bad plastic. I was working with the worst thing I could find. I tried to do something nice. And it was a good feeling” (Goldsmith). (See Figure 6) Initially, she had not done it to be eco-friendly, but caring for this cheap material made her reflect on how it could contribute to more sustainable practices.

The Goldsmith also talked about how, for the last 12 years, they (she and her partner) have been using Fairtrade materials in the studio because they became aware of how politically problematic and polluting for the environment it is to use non-fairtrade metals. To her, “this is the right way of making jewelry. This is the right way of using materials.” She explicitly articulated: “I just think it's very important to change the mining industry. (...) it's a big discussion, you know, for us. (...) So right now, when we do new things, we do it in Fairtrade. And when people come in, we ask if they have some old silver and gold. So, if people come in with the stones and the silver and gold, I would love to make something from that.” With precious stones, however, they were still looking for good Fairtrade options. Like solar-powered diamond productions.

RELATIONS WITH THE FINISHED ARTIFACTS

The craftspeople experienced different relations with the artifacts they produced. The Goldsmith expressed it as something that happened a lot at the beginning of a career because the artifacts represent part of their identity – that attachment lessens as the identity is more clearly defined. “I think when you're young, you like keeping it in another way than when you get older. I think that when you're young, you don't know who you are and making these things you put so much into it. And then it's really hard to give up. It's not that I still do that. It's not like I stopped doing that.” (Goldsmith)

Cabinetmaker A also described it as something that had to do with the time and effort put into a piece. This might be the same as what the Goldsmith is talking about: when you are younger, you inevitably put more time and effort into a piece. The cabinetmaker also mentions uniqueness as something that plays a role. “You get attached in some sense. I think that's also why I'm building extras of these (talking about particular chairs she made) because then it's fantastic to have some of them standing somewhere else, but I still have one. But it's only with some pieces that I get that emotional... you know, that feeling. I have one chair that

took a month to build – just one chair. And people, when they see it, they often ask if they can buy it, but it's like no, you cannot because it's also crazy. It's like, knowing that it's the only chair in the whole world that looks like this.” (Cabinetmaker A)

CRAFT AS A MATTER OF CARE

Through the interviews with the five craftspeople in their studios, we could zoom into established craft practices and unpack how craftspeople working in different disciplines approach their processes of making, their materials, and their produced artifacts. Based on the themes emerging from these interviews, we want to cast craft as a practice of *care*. A *care* for materials, for nature, for aesthetics, for their skills, for the process, and care for the people living with the artifacts for hopefully a long time after making.

According to the philosopher Maria Puig de la Bellacasa, “to care signifies: an affective state, a material vital doing, and an ethico-political obligation” (de La Bellacasa, 2011, p. 90). What we propose here is to see craft as a care practice. A practice that is not only material but is deeply engaged with the ethico-political consequences of their artifacts both in their production and in their afterlife. All craftspeople mentioned different approaches to care for their materials in their everyday practices unfolding in their workshops and aiming for sustainable practices of reusing materials or using Fairtrade-marked materials.

Just as we see how the craftspeople themselves are affectively engaged, especially when making the first or only version of an artifact. The affective engagement changes form over years of making. They also expressed concern for the affective states the artifacts would elicit. Concern for whether the artifacts would remain exciting and relevant, for example, when they worked with cleverness, imperfections, seemingly imperfections, and clear traces of the crafting process or when they aimed to balance the recognizable and the new. As such, the craftspeople worked to ensure their care transcended the mere process of making.

Even materially, these crafts are not processes of merely repetitive actions. Care is put into each meeting with the material at hand with its gnarls, knots, and impurities. Using their skills and experiences, they attune to each artifact in their making over time. Skills and experiences they are continuously developing and reflecting on through their practices and experimentations. Craft is a deliberate and careful altering of materials targeted towards making artifacts through the actions of one or more people. Craft, as seen here, produces artifacts that are cared for in multiple

ways and generate care for those living with them and the environment.

Of course, arguing that craft is a matter of care extends the notion of care beyond simple maintenance and repair. Political scientist Joan Tronto argues that care is “*everything that we do to maintain, continue and repair “our world” so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment, all that we seek to interweave in a complex, life sustaining web*” (Tronto, 1993, p. 103). In other words, care also includes an aspect of ‘building’ or actions to “continue” our world to make it as well as possible to live in. In de la Bellacasa’s notion of care, which builds on Tronto’s definition, we are obligated to generate care (de La Bellacasa, 2011). Care, in this definition, is thus a broader political and ethical matter with a material grounding.

We argue that the dual movements of care in the making and through the artifact are linked. We argue that the ability to generate care through the artifacts comes from the care with which they were made. From our interviews, we see how different ways of caring can contribute to the becoming of new affective relations between crafts person and artifact, which can potentially be transferred to the relationship between artifact and owner of an artifact. For example, the work to create intrigue and cleverness in the aesthetic expressions was closely linked to work with material imperfections (Cabinetmaker A) or seemingly imperfections (Goldsmith). The intrigue is a hook for people to later engage with and form affective relations.

Another example is the craftspeople’s ambition of making something timeless that can be used for generations. Their experimentations enable them not to be stuck in the past, while a longer perspective on aesthetics enables them not to be stuck in the present. Succeeding in crafting affective relations between owner and artifact is succeeding in generating care.

Another important point coming out of casting craft as a matter of care is how the craftspeople care for the environment. Their care for the environment is expressed in their practices in three ways: how they source materials, how they reuse materials when possible, and how they try to create artifacts that last aesthetically and materially. This commitment may have many reasons, but it was a vital issue for most of them. It comes from their affective relationship with the environment developed through their intimate relations with their materials.

DISCUSSION

We sat out with interest in exploring what interaction design, as a practice of making things with physical and computational materials, can learn from more traditional material craft practices. Curious as to whether this could be part of an answer to how we can begin to care enough about our computational things to repair them and use them for longer before we replace them. We interviewed five craftspeople to learn about their practices, values, and concerns. Casting their crafts as a matter of care gives us a handle to translate some of their practices, values, and concerns into a practice of interaction design. By unpacking and presenting elements of care in craft practices and processes, we suggest that becoming attentive to these elements can provide a lens to understand what the time-consuming messiness of manual labor and imperfect material expressions has to offer the making and maintaining of computational things.

Crafted artifacts, like the ones produced by the craftspeople we interviewed, are less controversial and riddled with ethico-political landmines than most computational things. However, that should not be an excuse to dismiss them as simple. On the contrary, even if these crafted artifacts are more straightforward, their ability to form stronger affective relations should be an inspiration (Odom *et al.*, 2009). More concretely, using the lens of *craft as a matter of care* when designing computational things can support practices of actively engaging with, and appreciating imperfections, maintenance work, and fabrication, also in interaction design as a craft practice. While craft rarely scales well in units produced, it has other qualities, for instance, in the longevity of the artifacts, which can be essential to consider even in a world of the Internet of Things, robots, self-tracking technologies, and eHealth. Our study makes us raise three questions for the interaction design community.

1. What if we look at our making processes in interaction design as a matter of craft, with the caring commitments it fosters?

When we make computational things, we craft code and physical artifacts, yet we rarely see the caring commitment expressed by the craftspeople we interviewed. Maybe it is because computational things are typically thought of as mass-produced artifacts, and we thus tend to outsource the making to others, or because it is an interdisciplinary endeavor where no one gets the whole picture in crafting their part. The craftspeople we interviewed developed their caring relationship with the artifacts, their longevity, and their impact on nature through their actions. That the element



of care resulted from a reflection in action (Simon, 1996). Computational things do not all need to be mass-produced. When they do, it may be that the process leading to mass production becomes a craft process.

Anthropologist Tim Ingold (2010) refers to the process of giving form to matter as a state of attentiveness. Referring to Deleuze and Guattari's *Mille Plateau*, Ingold argues that making is not a matter of *iteration* but of *itineration* – meaning it is about traveling attentively from place to place. In craft, materials are not “forced” into something, but through the skill and experience of the craftsperson, materials are allowed to *occur* or slowly be revealed (Ingold, 2010). Following *the force and flows of materials* will enable them to reveal their qualities instead of imposing form on the material world, a process that Ingold described as *foreseeing* (Ingold, 2012). In his view, a crafts person can see into the future through a respectful engagement with the “now” (i.e., materials, the process of making) instead of projecting a future situation on the present or determining an endpoint, which, in his view, is a core difference between craft and design practices.

Thus, opening interaction design practices to be more about *itineration* than iteration would allow a greater attentiveness to what comes. It would entail an interaction design practice in which engaging with the materials and tools is on par with user engagement. That we would develop a practice of *thinking with and for* materials, tools, as well as people to use concepts from de La Bellacasa (2017). But just as importantly, we should pay more attention to any *dissenting-within* (de La Bellacasa, 2017). Meaning we should recognize our own attachments and struggles involved in the process of making. The craftspeople presented examples of frustration with materials, tools, and aesthetics, but that it was also in that struggle they learned new skills, forged a deeper relationship with their practice, and developed a sense of care for their practice and their crafted artifacts.

2. What if experimentation does not end in the initial stages of a design process but is an attitude to remain open and receptive to the becoming of things?

The craftspeople we interviewed all mentioned different approaches they take to keep themselves intrigued in doing their profession, and some also push the boundaries of their craft. Experimentation is about seeking and breaking boundaries of both aesthetics and function. It is about problematizing conventions through exploring alternatives. In a world of rapid technological development, it is also about understanding the power and the ethico-political consequences of the things we make. They cannot be understood a priori nor solely in

the process of making. Experimentation is thus not a distinct phase taking place at the initial stages of a design process. Rather experimentation is a stance of being open and receptive to material expressions and the becoming of the artifacts. de La Bellacasa states that “*we must take care of things in order to remain responsible for their becomings.*” (de La Bellacasa, 2011). This entails that the interaction designer is responsible far beyond giving form to the computational things. We have an ethical obligation to follow the becomings of our computational things. We propose to see this obligation as part of ongoing experimentation with the world. Not in a blind exploration but in a deliberate ethical, attentive *itineration* of the lives of things we make. Taking familiar computational things and re-designing them can be an act of experimentation and exploration. Interaction design embracing the ongoingness of experimentation is a way to foster caring relationships with the making process and the artifact being gradually developed, as well as their becomings in use.

3. What if we design our computational things with a long-term commitment to their lives and, thus, the affective ties they form?

This is a question with many different paths for commitment. Directly inspired by the craftspeople, this is a question of aesthetics. What are the cultural norms and expectations we create with our computational things? What are the material and form references? Do the expressions balance the unique and the universal? Does the expression create mystique and intrigue? Are there imperfections (deliberate or otherwise) that will keep the users interested over time? Working with aesthetics may sound superficial, but it is not. From a sustainability point of view, it is crucial that we form long-term commitments (Verbeek, 2006; Droemann, 2021). It is essential that we develop affective ties. Odom et al. (Odom *et al.*, 2009) showed that engagement in terms of appropriation or repair increases affective commitment. Being able to relate to and engage with things beyond when they are new and shiny is crucial to forming such bonds. Similarly, Tsaknaki and Fernaeus (2016) showed that becoming attentive to and actively working with the imperfection and impermanence of materials can be a design resource when making computational things. The intrigue and cleverness the craftspeople work with constitute a hook; they are the agency, the “slight surprise in action” (Bennet, 2010, p. 27) that enables us to form any affective tie with the artifact.

Affective ties are also formed through use and usefulness (Odom *et al.*, 2009). Thus, the quest for longevity also ties into the functionality of

computational things. How can we design to keep interest over time? How can we design for the longevity of use? Are cleverness, intrigue, and mystique a strategy here too? Hallnäss & Redström (2001) and Odom et al. (Odom et al., 2018) have explored such avenues through their slow technologies. Gaver et al. (2003) used ambiguity for the same. Having the ambition of designing for a long life of our computational things is key. We must break the problematic consumption cycle of mobile phones and other gadgets (Statista, 2023).

Reflecting on craft as a matter of care for interaction design from this perspective can offer one possible approach to developing ways of attending to and maintaining relations among a constituency of humans and nonhumans in design processes through concern, care, and humility. This means that a core aim when entering a design process would be to cultivate an open-endedness to the design space and to any other humans and nonhumans involved (including physical and digital materials), scaffolding a space for processes of becoming to emerge.

Attending to such issues and actively engaging with them is not supposed to be easy. It will always involve negotiations of designing with elements of cleverness and exploring boundaries of perfection and imperfection. It will also involve investigating new material combinations and interactive expressions and experimenting with developing our practices to support more sustainable futures of making and long-term use of products. As presented through the practices of the craftspeople we zoomed in on, there is no concrete and final recipe for engaging with such issues, nor is it an easy path to take. But at the same time, as interaction designers, we should continue to probe the boundaries of our practice in relation to affective commitments of care in the things we make.

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THE BLANK WHITE PAPER AS A DISOBEDIENT OBJECT

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ABSTRACT

On November 24, 2022, the White Paper Protests were started by Chinese people to protest against China's strict zero-COVID policy and excessive censorship during the pandemic lockdown. In the protests, blank white papers were used as a means of protest. Framing the blank white paper as a 'disobedient object', our paper intends to capture a glimpse of the aesthetic composition of the protest movement. For this, we collected responses from 42 Chinese citizens about their views of the 'white paper'. Based on the data, we interpret the aesthetic composition of the protest movement in three parts, 'Blank Means:', 'Blank Fiction' and 'Making with Blank'. Treating the blank white paper as a design artefact, our concern is not just the object's visual characteristics as a form of expression but also the potential and capability of 'Blank' to facilitate transformation and change that we believe is what a design object should do.

INTRODUCTION

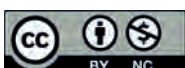
After the outbreak of COVID in late 2019, China took up strict prevention and control policies to combat the Covid-19 virus through the 'dynamic zero-COVID policy' (Liu et al., 2022). The White Paper Protests (late November to early of December 2022) were one of the most prominent and bold resistance responses to this policy. It began as a response to a tragedy on November 24, 2022, when ten people were killed in a fire in a

residential area in Urumqi city, which was under lockdown for over three months. Since the mishap, people started to gather, mourn and protest, to express solidarity with the victims of the Urumqi fire and also show discontent with the restrictive policy. The use of the 'white paper' was first spotted in Nanjing on November 26, when a person stood at the steps of her university with two hands holding a blank sheet of A4 white paper. Soon after on November 27-28, hundreds of people gathered on the streets and held blank white papers as a means of protest in Chinese cities like Shanghai, Beijing and Wuhan. Although domestic protests did not find a chance to appear again afterwards, demonstrations with the white paper as the protest object spread rapidly worldwide in many foreign capital cities organised by Chinese students studying abroad. Consequently, such protests were called 'White Paper Protests'.

On December 7, 2022, for the first time since the zero-COVID policy, China announced a nationwide loosening of quarantine and testing rules. It was soon after the protests that Chinese authorities reversed the restrictions entirely.

THE BLANK WHITE PAPER AS A DISOBEDIENT OBJECT

In Mandarin, 'white' and 'blank' share the same character '白(bái)', and 白纸运动 translates to the 'white paper movement'. Etymologically *blanc* (French), *blanca* (Old English) and *blanch* (Old High German) all refer to white or 'shining bright white'. So, for conceptual and presentational purposes in this paper, we use white and blank interchangeably. Echoing the conference theme of 'this page is intentionally left blank', our exploratory paper presents the blank white paper's transformation as a 'disobedient object' (Grindon and Flood, 2014) for Chinese protestors to express their voice. This positioning is from a design perspective than from other disciplinary perspectives, such as political science or sociology. From a design perspective, we mean it as a design artefact as described



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by Catherine Flood and Gavin Grindon (2014) in their exhibition on Disobedient Objects. In this exhibition at the Victoria and Albert Museum in London, they examined the powerful role of objects in movements for social change. Viewing social movements and protest sites from 1970 onwards as places of cultural growth, the exhibition curated a range of object-based tactics and strategies that social movements adopted to succeed. Disobedient objects are most commonly everyday, accessible and easily reused objects, appropriated and turned to a new purpose, to bring about social change with a multitude of struggles. For the curators' disobedient objects hold a mutiny of professional knowledge, skills and design, and within them manifest the power of change through political action. As the focus of the exhibition was the 'making' of disobedient objects used in social movements, it presents 'objects that open up histories of making from below'. A particular matter of interest from the exhibition's text for us was a note that there is nothing such as 'protest aesthetic', because for political movements it is always a matter of being emotionally moved, but each movement has its own aesthetic composition.

Using the above as an interpretive framing of the Disobedient Object, our intention with this exploratory paper is to capture a glimpse, a fleeting moment of history, a screenshot of the aesthetic composition of the blank white paper from the Chinese White Paper Protests. Treating the Blank White paper as a Disobedient Object, we present its aesthetic composition in three parts, '*Blank Means:*', '*Blank Fiction*' and '*Making with Blank*'. Treating the blank white paper as a design artefact, our concern is not just the object's visual and colour characteristics and its use as a form of expression but also its potential and capability to facilitate transformation and change, which we believe is what a design object should do.

42 RESPONDENTS

As the White Paper Protests started on November 26, 2022 in several cities of China, the first author (a Chinese citizen) conducted a survey with six questions on November 29. These six questions included asking potential respondents their 1) city of residence, 2) the number of PCR tests (a type of test for diagnosing COVID virus in China), 3) lockdown days, 4) their interpretation of the 'white paper' in this Chinese context, 5) new ideas to add to the white paper, and 6) to speculate a piece of fiction under the theme of white paper. The survey was originally created as an online form with a QR code through a China-based survey software. Only a couple of minutes after the publish button was clicked, the survey was deleted 'due to violations' by the platform. After this, the first author sent the questions to contacts separately from her

personal social media network. Thus, all data was collected through individual replies. In all, we sent questions to 133 persons and received 42 valid responses, 71 did not respond, 13 rejected, and seven said that they had not heard about White Paper Protests.

The 42 valid responses, coded as P01-P42, were all Chinese citizens. 31 lived in Mainland China, six in Hong Kong, and five in Europe. Among the 31 Mainland Chinese residents, 20 were from Shanghai, a city with an official city-wide lockdown from April 1 to June 1, 2022. All respondents were between 18-50 years old, and no respondent, from a health condition standpoint, was from a vulnerable group. All respondents were aware of White Paper Protests and provided their personal understanding of what the 'white paper' stood for, despite related news reports being banned in Mainland China.

COMPOSITIONS FROM THE BLANK WHITE

Instances of the use of white paper for protests have been noted in the past, for instance, in Hong Kong and Russia, but this paper only locates the discussion in this specific Chinese context. Also, it only includes the voices collected from the respondents in this study, and thus, does not present other formulations expressed by White Paper Protests.

We start our analytical interpretation for an aesthetic composition by briefly presenting the respondents' everyday lives during the pandemic through two sets of data: 'the number of PCR tests' and 'lockdown days'. We divided 42 respondents into three groups, from Mainland China (N=31), Hong Kong (N=6) and Europe (N=5) due to different pandemic policies. The dynamic zero-COVID policy was implemented only in Mainland China. From the answers of each group, we averaged the numbers (Figure 1). The 31 Mainland respondents' average number of PCR tests was 104 times until their responses to this study. This high number was due to the compulsory testing policy that every resident had to take one test every 24, 48, or 72 hours according to the situation. If protocols are not followed, health authorities would intervene to ensure the test. Also, one's access to public space, including public transportation, hospital or restaurant, would then be severely deprived through a tightly controlled digital healthcare system. The second set of data is about days of quarantine or isolation when residents were not allowed to leave their home or residential building. The average lockdown days of Mainland respondents was 68 because of the city-wide lockdown policy. An account briefly presented shows how PCR tests became part of the routine: '*During the Shanghai lockdown last April, we had to do PCR tests every day on campus, then later became 2-3 times per week. Now, back home (in Fujian), whenever I see a PCR test kiosk on the street, I*



feel like just doing it to continue my life.' (P26 from Fujian).

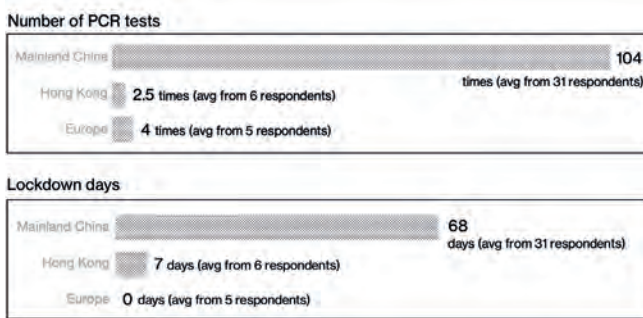


Figure 1: The 42 respondents' number of PCR tests and lockdown days during the pandemic

The White Paper Protests expressed two interrelated appeals according to our respondents. One was people's discontent and anger against the pandemic policy and/or the enforcement measures adopted by various local governments and authorities. These have caused limitations of rights to mobility and other healthcare resources, inconvenience, economic loss and other secondary accidents in daily living. And the second appeal was the accusation of increasing censorship of a sensitive topic of the pandemic policy (Chang et al., 2022). Just as the Politburo Standing Committee, consisting of the top leadership of China, stated that 'resolutely fight against all words and deeds that distort, doubt, and deny China's zero-Covid policies', different opinions, frustrated feelings, neutral scientific references, and sharing of factual daily events were forbidden on Chinese internet if they did not appear supportive (Ruan et al., 2020).

Next, we present how the 'blank white paper' became the means of protest and a disobedient object from the people in a censored society. Building on this framing, we disperse the blank whiteness into multiple components.

BLANK MEANS: A SOCIETY OF CENSORSHIP: 'THE ERASED, WIPED AND DENIED'

The first meaning of blank was a sign of the excessively censored society where people were not allowed to openly express or share things that were inconsistent with or disfavour the government's zero-COVID policy or actual enforcement. Related content published online would be censored and deleted immediately, and some accounts banned temporarily or permanently. On the internet, people have experienced too many times when they clicked a link to an article or a video, they encountered a blank page showing words such as '404' (the code for 'Not Found'), '403' (the code for 'Forbidden'), 'does not exist' or 'this content cannot be viewed due to violations'. Thus, the blank paper represented *'the sad fact that no matter what I say, it would be erased'* (P14 from Shanghai), including *'the*

unspoken things, the unseen things, everything that has disappeared' (P06 from Shanghai). It presented the overwhelming, blind and slavish censorship, and government's deliberate blindness to people's needs and voices.

BLANK MEANS: THE POWER OF THE SILENCED: 'SILENCE SPEAKS LOUDER THAN ANY SOUND!'

In a society where different opinions were silenced, what could people say to express disobedience? Displaying silence became a protest weapon of silent people. People concretised the silence into the material form of a sheet of blank paper. People performed the silence by holding it high with their hands in public places. By doing this, the message was clear: *'We cannot say, but we still want to say.'* (P25 from Fujian). This scene strongly delivered the contrast between the vulnerability of people deprived of the right to expression and their courage and boldness of expression. In the protest, they no longer kept silent about their silence or spoke behind the back of the dominant. They chose to speak up with silence from the front, directly and openly. Unlike other expressions they used to do before, people no longer produced content and then watched helplessly its disappearance. Instead, they directly jumped with a blank. Their expression could not be deleted because it was already blanked. This time, people took control and left the dominant powerless. When silence was the only thing left, they made the silence loud and the blank full.

Therefore, several respondents commented that *'the silence is louder than any sound'* (P09 from Shanghai, P38 from Europe). As P34 from Europe described: *'I tried to add some words to the blank paper, but realised no word is more powerful than the blank. Blank is our ultimate protest slogan'*. Among 42 respondents, 33 considered it unnecessary to add anything extra to the blank paper, as *'the blank is strong, powerful and concise enough to convey their voices'*. It also shows another meaning that blank was a shared and united gesture and belief by whoever held the same stance, as P25 from Fujian put it: *'Although you don't say, I don't say, nobody says, we all know what we want to say!'*. Moreover, the silence added a flavour of irony and mockery to the protest, which used *'the absurd to reveal the absurd, to fight against the absurd!'* (P28 from Jiangsu).

BLANK MEANS: A NEW START: 'REPRESENTING POSSIBILITIES'

Walking to streets from the censored internet and holding white paper high was a rare scene in China. It showed the courage and boldness of people. With this light of hope, blank, from another perspective, was seen as a new start, *'inducing everyone to paint, write, fill, stain, and so on.'* (P08 from Shanghai)

Below, we present a piece of writing from P31 from Hong Kong on Whiteness. In it, he also quotes from the Korean commenter Quan Xizhe and the Russian artist Wassily Kandinsky. He told us that white blankness was at the intersection of loss and gain and allowed things to be born.

'White is not a kind of juxtaposition with other colours. White is actually the background colour that makes other colours appear' (Quan, 2018). White is nothing, but it allows a certain substance to be born.

'White is not death. (...) That is the young 'nothing', more precisely, it is the nothing before the beginning, the nothing before birth.' (Kandinsky, 2012)

White opens, again and again to time, and regains through loss. In the sharpest white, life and death are allowed and promised at the same time. Quan Xizhe (2018) said: "There, you will see the possibility of existence that seems to have been lost. It has not disappeared and remains there. I will meet you there, and I will meet others who are coming there, in that substratum, which is hostile and cold, soft and dissipating, and at the same time breathtakingly beautiful.'

The poetry of the blank is also the politics of the blank. Because when we are in the land of nothingness, there is the existence of the universe.'

BLANK FICTIONS

Through the data gathering process, 12 participants created 14 pieces of fictional stories under the theme of white paper. None described a less censored society or proposed a solution or an ameliorative approach. All were written like Aesop's Fables to mock, criticise or exaggerate the censored society. For instance, eight pieces portrayed a fictional world where more strict control policies on the use of white paper are imposed, such as manufacturing and use of white paper being banned, or only purchased through real-name registration, and white shirts being banned. Below, we present two fictional worlds that mock blank reality, the first flavoured with mythical amusement.

Fiction 1: 'In the White Paper Kingdom, all people are white papers. When they are born, they carry various characters on their' bodies'. As they grow up, the traces of characters will gradually fade. When they are almost 7 years old, there is a health department that specifically checks the disappearance level of characters. People with characters less than 30% of the body area are normal, and people with more than 70% will be taken to a centralised scar removal room for isolation. The whitest person will be selected as the most popular person, granted the best social welfare and white house.

When people start to communicate and generate personal thoughts, these thoughts will remain with their bodies, if they are not forgotten in time. Therefore, there are many bleaching beauty salons all over the country, providing regular bleaching services. Or people can also take supplement products to erase their thoughts. In all, everyone consumes actively to make themselves whiter. Because people can't remember yesterday's thoughts or pain, everyone in the White Paper Kingdom is very happy.' (P06 from Shanghai)

Fiction 2: 'The white paper of happiness has been invented. No matter what people write on it, the paper can only show words about happy lives and emotions. And the noise will automatically disappear without leaving a trace.' (P33 from Hong Kong)

MAKING WITH BLANK

The data also generated ten new ideas from nine respondents about what could be added to the blank paper. Many things were suggested, such as seeds and a person-shaped Chinese character of 'person' (人, rén). Here, we illustrate one concept:

'I hope the blank paper is covered with needle holes that must be zoomed in to see.' (P06 from Shanghai).

This simple concept we interpret as the relationship in a society between the top-down governance and the expressive agency of individuals from the bottom-up. The whole piece of white paper is a metaphor for the formal image in the government's eyes. It appears harmonious, pure and smooth, with no extra noise or stains on the surface. However, when one gets closer, the previously invisible or hidden needle holes appear visible as the representation of individual voices and feelings. The needle is the insignificant yet stubborn and strong citizenry. The holes are the traces resulting from the disobedience of individual citizens. Albeit almost unseen, these holes have made the piece of white paper to be seen through, agitated and rough. Comparatively, the softness of the paper material indicates the fragility of the dominant system that is meant to control.

Lastly, we leave you by making one-page blank. With this, we display with solidarity, all erased content, denied truths, lost lives, silent cries from the protests, and all other unspoken words that can bring change.





CONCLUSION

You have now scrolled and travelled across the blank white paper as an aesthetic composition, a tiny sliver from a social movement, a Disobedient Object from the White Paper Protests. As final note we also hope you see this:

'I'll see you in the silence of the birch grove. I'll see you in the silent window of the winter sun rising. I'll see you where the light hits the sloping ceiling where the dust shakes and shines. In that white, among all the whites, you'll take a deep breath.' (Han Kang <All the Whites> quoted by P31 from Hong Kong)

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Interventions] — [Realities

FACTORY FIELDWORK INFORMING THE DESIGN RESEARCH PROCESS

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ABSTRACT

Engaging with manufacturing operators in design research poses a myriad of challenges ranging from ethics to logistics. We describe a process of qualitative, mixed-methods, non-participant fieldwork user research involving 10 garment factory workers created to inform the design of technology to support operators' physical and mental health. The resulting data were subjected to thematic analysis which identified themes that informed not only the design of technology, but also the co-design process itself. In this paper, we explore the latter as a contribution to design research methods, discussing the implications of analysing user research data towards informing design researchers' behaviour in their interactions with research participants and how these might help collect ecologically valid data.

INTRODUCTION

Manufacturing jobs are often associated with occupational injuries, a phenomenon which has been studied for long to develop preventive strategies, and which is growing along with an ageing workforce (Peng and Chan, 2019). There has also been an increase in research on psychosocial aspects of such jobs, as well as on the interplay between physical and mental health at work (Wixted, Shevlin and O'Sullivan, 2018). In Europe, depression and anxiety account for up to 50% of chronic sick leaves (World Health Organization - Regional Office for Europe, 2021). Digital technology has the potential to prevent physical and mental complications at work through active and passive data collection, communication, and information (Romero *et al.*, 2016). However, to increase chances of usefulness and meaningfulness, it requires workers to be involved in the design (Béguin, 2007). User research and codesign methods are used today in a variety of contexts, including factory shopfloors. However, these are usually highly controlled environments which challenge design researchers in attaining expected intense researcher-participant contact. Such level of contact is critical to establish *rapport* (Erete, Israni and Dillahunt, 2018; Groeneveld *et al.*, 2018).



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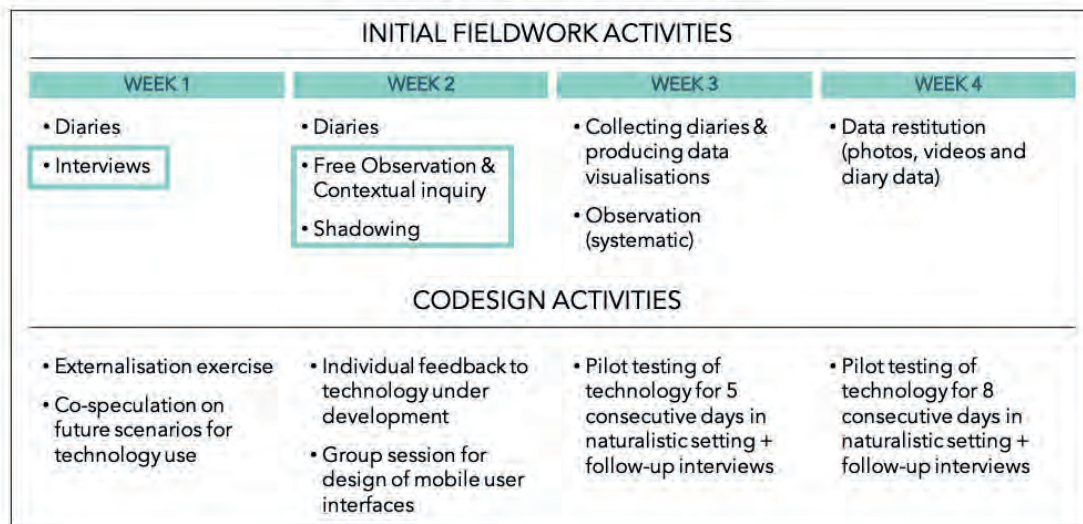


Figure 1: Outline of user research and co-design activities throughout project OPERATOR. This paper reports on the interviews and free observation, outlined in the image above in light green.

Factory shopfloors are challenging environments for user research and codesign for various reasons, such as participant recruitment, safety issues, confidentiality, work schedules, or agreements with worker unions (Ardito *et al.*, 2014). There are reports of workers being suspicious of new technology being presented to them by designers (Heikkilä, Honka and Kaasinen, 2018) as well as reports of difficulties in conducting pilot studies, especially at scale (Mattsson, Fast-Berglund and Åkerman, 2017; Peruzzini and Pellicciari, 2017; Heikkilä, Honka and Kaasinen, 2018).

Ethnographies of work have described communities of practice among members of a certain profession (Orr, 1996), aspects of gender performance (Cross, 2012), and group behaviour (Chakravarti, 2011). These are examples of aspects which are relevant for design researchers to be aware of in the process of establishing rapport and to improve likelihood of collecting ecologically valid data. However, not always is this generic information about user groups available to design researchers prior to fieldwork. Furthermore, each worker group has conditions and dynamics which are unique, requiring fieldwork researchers to build their presence (Daniellou and Rabardel, 2005; Barcellini, Belleghem and Daniellou, 2014; Schwartz, 2021).

In the process of doing user research to inform technology that could support manufacturing workers' physical and mental wellbeing, we collected data that were, in itself, relevant to establish rapport and to inform user research and codesign as a process in this particular setting. In this paper, we present it as a case study (Breslin and Buchanan, 2008) with an approach to data analysis that we expect may be replicated by other design researchers in similar circumstances. To illustrate this possibility, we conclude with an account of how the lessons learned were applied to another research setting.

FIELDWORK CONTEXT

The research was held in a garment factory, a partner of the R&D project OPERATOR, with just under 300 workers, most of whom women. The shopfloor has several sectors (e.g., cutting, pre-assembly...), each led by a line manager. The factory produces high-end garment pieces with very low fault tolerances. Garments are produced by moving from one sector to the next, making sectors interdependent. Inside each sector, the pieces also move unidirectionally, therefore, operators' work is also interdependent.

The factory has general work orders by clients, which are distributed chronologically through the sectors. Therefore, each sector has daily and weekly objectives. Before deciding on closing a deal for a work order, clients need to see prototypes (also called samples) of the pieces, therefore, some operators' workflow may be interrupted with a request to produce a sample for a client.

MATERIALS AND METHODS

To inform the design of technology to support physical and mental wellbeing, we sought to understand operators' practices, aspirations, and concerns, as well as the context in which a future design could be used. The study received approval by the ethics committee of the Faculty of Psychology and Educational Sciences of the University of Porto (Ref.2020.09-6). To conduct the study, the garment manufacturer in the project was asked to announce the study and invite operators, seeking to achieve variability in terms of age, professional experience and type of operations. Gender-balance was not sought since only women worked in the sewing operations.

Ten operators volunteered to take part in the study. The study involved ten female operators (average age 40.6 years (SD=9.7)). All performed sewing operations, but belonged to three different sectors, which stood at different phases of the process of building a garment piece.

A multidisciplinary team of design and work psychology researchers took part in non-participant fieldwork, during which we used the following methods individually with each participant: a diary study, interviews, free and systematic observations, an externalisation exercise, and a speculative design exercise, which happened in the course of four weeks of fieldwork.

In this paper we report on data collected through the interviews and free observation with contextual inquiry (Figure 1). Interviews were audio-recorded and transcribed verbatim. Observations were further documented with photographs, video, and drawings. The data were analysed using Thematic Analysis (Braun and Clarke, 2006) to find implications for design.

As we reflected on four themes that emerged and how they could be translated into *designed products*, we examined how they could inform our *design process*: they informed design research behaviour in the field.

RESULTS

In this section, we describe each theme, along with fieldwork pictures and operators' quotes when relevant.

SEEKING PERFECTION

In operators' eyes, perfection is conceptualised differently depending on the stakeholder: to the company (employer), perfection is associated with innovation, following rules of conduct (e.g., workstations nice and clean) and improving efficiency, namely through training flexible workers, i.e., those who work on multiple operations and machines. Each client is also associated with a certain level of perfection:

Interviewer: *You say these clients are more demanding. How is that felt on the production line?*

O7: *The chief [line manager] lets us know. Several times a day, I guarantee you. And we know by the brand, right? We also associate brand to client.*

Operators understand that they are requested to produce a certain number of pieces per hour to meet the company's commitments to clients, but they also understand that they work for high-end clients and under very low fault tolerances. At times, this forces operators into a debate of values (Schwartz, 2021) to choose between meeting production goals, meeting personal life demands (e.g., avoiding overtime) or

staying true to their work values. Perfect is what operators report they need to be.

There are situations which are more prone to defects (Figure 2). Producing samples is one of them, because it is a new, one-time job, which carries with it the pressure of delivering a high-quality piece to show to potential clients. Furthermore, there is often one person looking over operators' shoulder when preparing the samples. Being observed during work is stressful for operators, especially if the observer knows the trade.



Figure 2: Piece with defect.

Other situations prone to defects are working with difficult (e.g., slippery) fabric or working with striped/checkers patterns. However, even though their work might be made harder because of faults in prior phases of the production process, operators think of defects as being their own fault.

Operators can be confronted with defects that they themselves notice or they can be faced with one or more pieces to fix at the end of the day. In the first case, they have a bit more control, but it can also be highly frustrating when they keep trying to fix the same piece and it does not come out well time and again. The second case is a common reason to determine a bad day at work. Operators will much rather do a new piece than fix a defective one sent back by the quality control department. The second case also has the effect of surprise, which, here, intensifies the feeling of frustration (Ortony, Clore and Collins, 1988).

O8: *What makes me suffer the most is really the job coming back with defects. No doubt about it. No doubt about it. It's really bad. It's bad internally, because there's no one there pestering us, not at all. But, internally, it's really bad. It's feeling we're not being able to.*

Operators report experiencing flow (Csikszentmihalyi, 2008) when work is coming out at a good rhythm and with no defects. The feeling of flow is influenced by the operation, by the fabric, by the machine and by whether operators are being pressured to get the job done quickly.

O5: *A good day is the job moving forward steadily and well-done. Not having pieces to fix, nothing. A steady*

job is everything coming into the line as it should. Sometimes this doesn't happen because of the fabric, because of everything. The machine isn't always working well and needs fixing. That's it, if it comes nice to us, we let it go nice as well. It moves forward.

Flow, in this case, has a certain synesthetic quality to it: one can see the steady movement of the pieces down the production line, when production experiences no glitches. Flow is also more associated with some clients than with others.

RESPECTING AND OBEYING TIME

The garment business runs on cost-per-minute. Every hour, operators need to note down how many operations they did. Since they mostly work on the same operation, regardless of the work order, operators have in mind their personal 'number' for the operations (i.e., how much they produce per hour) depending on the type of fabric and pattern they are handling. Time is, therefore, a source of daily pressure, as operators quickly understand if they are delayed. Line managers are also controlling how many pieces leave the sector, so they quickly know whether they are on schedule. If the production is delayed, line managers will pressure operators to work faster. When time is tight, operators will likely begin by saving time in work control: rather than checking all the pieces after they are done, they may start checking less and leave it for others to do that quality control; however, this is uncomfortable, as it has implications on one's work values as described above.

The concept of time is also present at a longer-term scale. Although factory work tends to be thought of as repetitive and unskilled, operators know that it takes a long time for one to master one's skills in a garment factory. Line managers play a prominent role in teaching operators a new operation, and less experienced operators often highlight that they are still learning. All operators accept that only time will allow them to master their art.

O6: *...I haven't been a professional in this job for long because I've only worked in jackets for nine years...*

Once an operator reaches a certain level of seniority, they have a greater leeway, as illustrated by O5 below. However, together with years of experience, hierarchy must also be respected.

O5: *Sometimes it's not even with me, because I can very well defend myself, because I'm old enough. It's not just anyone who walks over me anymore. You understand? I have another mentality. Sometimes I get hurt, but now I answer back, I'm no longer one of those who keep silent. That's over. As long as I am right... Before, when we were young, we would shut up and cry and do everything. But now I think that my age can't be overlooked. If I have my job, they must respect me, they must respect everyone, as I must respect my superiors.*

RELATING TO ARTEFACTS

Operators are often attached to 'their machine', which allows them to make 'one's own work' the best. It is generally accepted that everyone knows about their own work the best. Since the company strives for flexible operators who can work equally well in several operations and machines, this is repeatedly a point of tension.

O9: *It's funny because I went on sick leave and when I came back, she wasn't working well and I started rambling: 'The owner was out, and they came here to mess with my machine.' They [mechanics] had to wax it all. Because I'm used to her, I know how things work, I know how she works.*

O3: *...For example, I spent around 3 or 4 years in the same machine, and we try to take care of our machine, right? Now, if we jump from one machine to the next, it's easy to see that they... One doesn't take care of them the same way we do when we have our own. Later they even took my machine away and I'm like: 'Damn, so much care and she's gone'.*

Operators say that they know their machine, they know how to fix it, they know how to bring the best out of it, and their machine is fine-tuned to their way of working. Operators recognise its noises, sometimes they personalise it and they keep it clean. Cleanliness is often associated with machines, while using someone else's machine is often referred to using expressions of disgust and fear of breaking the machine.

Operators also mention that their machines have something special compared to others, e.g., being hard to use by others, being technologically advanced, or being complex. Machines seem to be associated to memories of learning the trade, as operators tend to mention the machines they like the best are those they first learned to work with. It is frequent to see machines and other utensils marked with operators' names.

Machines are always in interaction with operators' bodies and with fabric. In the garment industry, fabric must be respected. But fabric has meaningful associations and a strong impact on operators' spirits. In a place where fault tolerances are very low, seams need to perfectly match patterns in the fabric. Although operators can rarely name the type of fabric they handle, all associate plain fabric to easy work and flow, striped fabric to more difficult work and a decrease in production, and checkers fabric to difficult and highly stressful times. So much so that operators suffer in advance when they realise that their next work order will be stripes or checkers.

Apart from the machine, operators use utensils – some provided by the company, but most owned by operators (Figure 3). All operators brought personal objects, such as water bottles or cushions. There are also tools, like jigs, made by operators or line managers. Operators are not allowed to have non-work-related objects over the sewing machine table. Many machines come with a small drawer, which is used to store operators' utensils. Other than that, operators use their vest pockets to store and carry utensils and personal objects, such as medication, sanitary pads, alcohol gel or hair rubber bands. Operators are not allowed to bring smartphones onto the shopfloor.

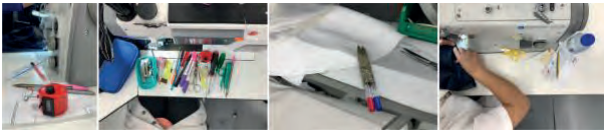


Figure 3: Personal tools brought by operators (two pictures to the left) and two tools created by line manager and operator, respectively (two pictures to the right).

ACKNOWLEDGING A SUB-CULTURE

Operators often mention that existing stereotypes associated with the textile industry match reality. Working in the textile sector means acknowledging and accepting these stereotypes. One's work is dependent on others and affects the work of others ahead in the process. This interdependence affects not only how quickly pieces are produced, but also how easy they are to produce. As stated above, each person has 'one's own work' in which they are good at. The person who is the best at their own work will likely be asked to teach novice operators – something which might or might not be done willingly due to fears of losing one's uniqueness.

Expertise may be signalled by work vests. Operators wear white vests, line managers wear blue, and quality control wear yellow. All operators receive a couple of vests from the company, and all receive vest replacements every few years. Workers are free to discard the old ones. While vest models are similar, they



Figure 4: Work vests (from left to right): embellishment of personal vest (two pictures to the left), older operator vest, and line manager vest in blue.

change slightly over the years. The vests given to the very first operators in the factory had a blue rolled hem, while the newer ones are all-white. Older operators may keep and still use the vests with blue rolled hem, which signals their seniority (Figure 4). Exhibiting external signs to other members of the same work sub-culture

has been reported before in relation to seniority (Chakravarti, 2011) or expertise (Cross, 2012).

When line managers who are regarded by the operators' group as having less experience in a certain operation force operators into doing their work in a certain way, this causes social tension:

O3: ...Because she wasn't a chief, she was an employee like we are and she was going to learn from us, right? Because she was like us. Like if I go do another work, I don't know about it and someone must teach it to me, right?

Interviewer: Sure, sure.

O3: And we were the ones who should do the teaching. But there were moments we told her 'look, it's not like that'. Because it's, like, my work. It's obvious I knew much more about my work than she did, right? Like she knows her work better than I do. And if I gave her ideas, if I said 'look, no, it's better like this'. Forget about it. Forget about it because she wouldn't accept it.

In the textile industry sub-culture, the role of the line manager is a prominent one. The line manager pushes and pressures operators, but she also often teaches them the trade, instructs them whenever new models come into the line, often improves work conditions to avoid injuries or to make the job easier, and she might shield operators from external harm. A line manager who is younger in the trade than the average operator in the sector or a line manager who will not respect operators' knowledge of 'one's own work' will not easily gather respect from the sector. This will cause animosity and, in operators' words, even someone from the outside can recognise 'stressed sectors'.

Operators often complain when there is too much pressure, but also accept they will be pressured by their own sense of perfection, will be pressured by externals looking over their shoulder or asking them to produce at a higher speed, and they will be pressured by seeing that colleagues ahead are waiting for work.

Interviewer: You don't feel that pressure exists.

O6: No, no. I don't feel it. Well, of course my chief [line manager] is in our sector and the more we produce the better, right? And she obviously won't be patting our back. She must reach her goal because she also has her duty. That we understand.

In an environment where work is interdependent, operators often comment on colleagues helping each other by sharing knowledge, doing work in a certain way to facilitate the work on the person who will work on the garment next, or even adjusting production rhythm not to strain colleagues who might work at a slower pace.

O6: ...When I'm working on checkers or stripes, I put to the side the half with a chest pocket from the half

without, so that the girl ahead doesn't have a lot of work sorting them.

However, it is also common for operators to refer to a difficult social environment where each new person is scrutinised by the others, especially when they join the group. Younger operators report it was more difficult to learn how to deal with the social environment than to learn the trade. Although we have never posed follow-up questions about what this might mean, remarks on the social environment were often associated with comments about the fact that most operators are women.

O8: ...Just an evil look would bring me down. That's what I meant. But it's natural. I think it's a lot of women together. I think it's difficult.

LESSONS FOR THE DESIGN RESEARCH PROCESS

Our results outline common issues highlighted by Barcellini et al. (2014) and Schwartz (2021): the 'creation of researchers' presence' in the field – associated with the appropriation of the jargon of the trade; the knowledge of the significant objects related to the job; or the singular dynamics of work teams; as well as the principle of 'commensurable knowledge' between researchers and workers during the process of codesign.

Next, we describe how we have operationalised our findings from user research to inform the *design product* into findings to inform our *design research process*.

RESPECTING OPERATORS' PERFECTION

Seeking perfection was part of who the operators in this sample were. Not being able to reach this goal has implications on operators' openness to take part in our research activities because it causes poor spirits and because it leaves operators less free time to engage in research. This is one of the signs that we learned to read from operators. When operators are not able to reach perfection due to design research activities, chances are operators will evaluate the fault as being their own, not researchers'.

After some days in the shopfloor, researchers start picking up the signs on the sectors – a sector with garments piling up is stressed and less willing to take part in research. A certain operator working on a different machine may also be a sign of a stressed sector. A sector working with checkers will show a group of operators who are more stressed, and researchers should disturb operators as little as possible, as higher degrees of concentration are required to make checkers meet in the seams. By observing operators in preparing a sample or, more critically, by observing an operator while they persistently fix a defective piece will likely cause an unnecessary and nefarious burden on operators. On the other hand, recognising which client the sector is working for on that day can already

give researchers an idea of how easy that work order might be for the operators.

Being perfect reflects on research artefacts too. When preparing materials for codesign, we took extra care to make them echo this quality of perfection and neatness (Figure 5), which was something operators noticed and spontaneously expressed appreciation for. These acts signal to operators that researchers are paying attention to the information that is being shared, that they respect operators and that they place effort in carefully designing bespoke materials.

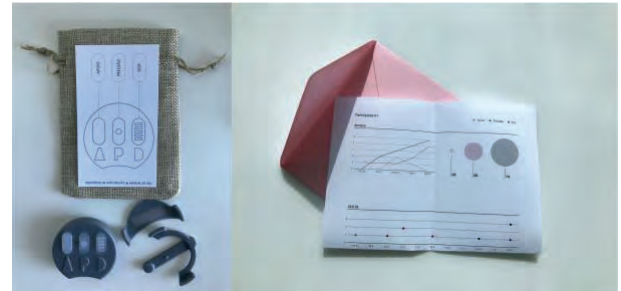


Figure 5: Kit delivered during codesign phase: individual bag with device to test and respective instructions (left) and individual envelope with personal data collected with device (right).

CONSIDERING MANIFOLD DIMENSIONS OF TIME

For operators to be involved in design research activities, line managers need to be informed and may need to authorise it. User research activities prepared in detail assist line managers in managing their sector while some of the operators are away. However, because absenteeism can be high and unexpected, detailed planning might not suffice. Once reaching the shopfloor, researchers learn to read whether the sector is feeling stressed and whether the work order may be delayed by looking at piles of pieces. Learning to respect time also means that researchers should be prepared to improvise to deal with time constraints, e.g., by changing order of participants or deciding which parts of the protocol may be dropped and carried out on another occasion.

Understanding seniority levels, especially relative to other operators participating in the research, is critical to build rapport, e.g., asking a senior operator if they do tasks associated with junior positions can be offensive. Furthermore, a senior operator is one who is more likely to be called upon for samples, for assisting with other machines or to engage in other activities which fall outside the planned tasks for the day. Therefore, researchers must be especially aware that experienced operators may be suddenly unavailable.

Crying is a reaction that is often mentioned by operators and is especially associated with early times in the career. User research allows researchers to understand what may be trigger situations for operators and which

supervisors are more likely to upset them. Being aware of these helps researchers read situations in the field, e.g., during contextual inquiry or systematic observation. User research reveals this by observing how operators react to others and in interviews by the terms that operators use to refer to others.

MINDING ARTEFACTS IN DESIGN RESEARCH

Once the operator-machine relationship was understood by researchers, we knew we had to respect it. This meant regarding the machine almost as an extension of operators' bodies and, therefore, refraining from leaning on it or placing objects on it, at least not without operators' consent. The intimate relationship with tools of the trade has been reported among professional chefs (Robinson and Baum, 2020) and finds echoes in intimate relationship of human bodies with assistive products or wearable devices as body extensions (Winance, 2019; Nelson *et al.*, 2020).

Understanding this relationship also helps researchers to understand the limitations to the quality of data they might be collecting if the operator participating in contextual inquiry might happen to be displaced from their preferred machine at that specific time. Rapport can be nurtured in this case by making sure that researchers revisit this operator when they are back on their machine.

Often, operators resume working after some activity with researchers. From these activities, they can bring with them artefacts given by researchers, including prototypes and leaflets. Understanding the importance of a material culture and where the artefacts given by researchers may be placed, stored, and hidden from sight if needed becomes very relevant to promote engagement of operators in the design research process and opportunities for collaboration.

EMBEDDING ETIQUETTE IN DESIGN ACTIVITIES

Operators report to their line managers. However, to participate in design research activities, they can be recruited by others who are higher in the hierarchy than line managers, in which case line managers are only informed that their operators will be participating in activities with researchers. Learning about the power relations taught the researchers to seek implicit approval from line managers despite the process flow described above. The inter and intra tensions, in tandem with sense of belonging, were also reported by Chakravarti (2011) in an ethnography of a garment factory.

Understanding the workflows is critical to identify features for the design of devices that can be used during work hours. However, the process followed by operators is not always the prescribed one and this cannot be disclosed. Neither by the design itself, nor by actions from the researchers in the field. This is in line

with dilemmas faced by Heikkilä *et al.* (2018) that led them to adopt Ethics by Design, or the type of situations originated by the use of participatory design techniques that has led Frauenberger *et al.* (2017) to suggest In-Action Ethics. Fieldwork helps researchers to understand and respect etiquette in this and other regards.

During our interviews and observations, we understood that the etiquette prevented operators from addressing sensitive topics. To respect this etiquette and still allow operators to express their concerns and expectations about the information that different actors in the factory should have access to, we have created an externalisation exercise that took advantage of the fact that materials and utensils have meanings associated with them.

In individual sessions, we presented operators with four cards, each naming a job role: operators, line managers, production management, and administration. We also presented operators with an array of objects related to their trade and we asked them to associate each card with one of the objects (Figure 6). After operators made the associations between job roles and objects, we asked the reason for the association and, finally, we asked operators what information that object was currently lacking. The understanding of a sub-culture, its symbols and its values allowed us to design a user research activity that simultaneously respected and leveraged that sub-culture.

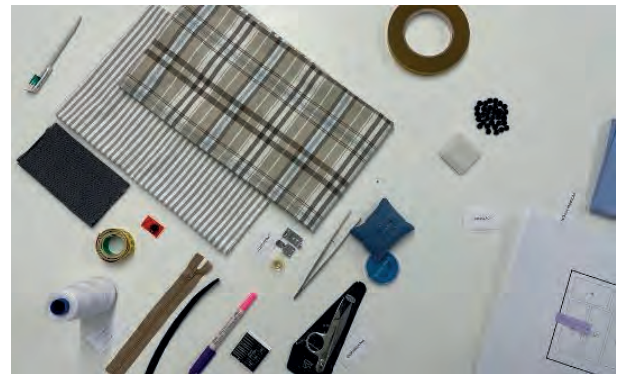


Figure 6: Externalisation exercise with objects presented to participants and job role labels.

A TEST TO THE LESSONS

After gathering the insights described so far, we engaged in design research at another garment manufacturer in a different research project entitled STVgoDigital. Here, we sought to test the lessons learned in a project meant to create an exoskeleton to reduce musculoskeletal injuries among sewing operators. We began by bringing our lessons learned to inform a semi-structured interview script followed by non-participant observations to 10 operators, all female. Fieldwork amounted to one week. The interviews were

recorded in audio and the observations complemented with notes by researchers as well as photos and videos. The data were analysed by two design researchers using affinity mapping.

The less than 50 operators in this factory produce high-end, technical garments. Here, there was one line manager for all operators and several work orders being prepared simultaneously. Contrary to the other factory, here most operators can operate multiple machines.

The concept of ‘**perfection**’ arose again. Despite the different organisation of the workers, machines and workflows in the factory, the signs of perfection being met or unmet were the same. Furthermore, flow (Csikszentmihalyi, 2008) arose again with its synesthetic qualities and we were able to read the signs of flowing work from the factory shopfloor by combining prior knowledge with information provided by the operators during the interviews.

We did not witness stressful sectors of the production line affected by **time**. Therefore, we did not witness this dimension of time. This might have been because it did not exist or did not materialise in the same way in this context. We found the concept of time as applied to seniority, which was then useful to swiftly understand hierarchies. This ability to grasp a social dynamics and value constellations is critical in fieldwork, where design researchers are often faced with the need to make split-second, ethically appropriate decisions (Frauenberger, Rauhala and Fitzpatrick, 2017).

The **operator-machine relationship** was very pronounced in this factory, even though operators switched machines very often and the management kept conveying the message that machines have no owners:

P9: When I came to work here, I came to work as a seamstress. Because I came as a seamstress, they gave me a machine. From that point onwards, and while I work here, I have a machine.

P9: Sure, one also drives any car, but it's not the same. In the beginning you start getting to know that car's tricks. (...) For instance, I rarely call the mechanic because I already know how to deal with the machine. I know my way.

Equipped with this knowledge, we were able to, whenever possible, observe operators in ‘their machine’ and in ‘one’s own work’, which also allowed us to then observe where operators kept their belongings and how they made small hacks to ‘their’ machines and utensils so that they would work out best for them. Having an artefact that is ‘one’s own’, in this case an exoskeleton, may lead to a different person-product attachment. Here’s operator P9 again:

P9: If you have a car, you'll take good care of it. So that it won't give you any trouble. If you own a machine, you take better care of it.

The single line manager knows how to work in every machine and is often supervising five work orders simultaneously. This is very well-regarded by operators – an aspect that was observed in the first factory as well. Again, here there was the aspect of acknowledging and accepting a **sub-culture** with similar traits.

P3: When a new person comes in, she [line manager] must do her praxe [Portuguese term for the hard time given to freshmen when entering college], you know? They take the day to mess with our head. (...) I didn't cry! I swallowed it up, swallowed it up.

This operator goes on to tell us that she thinks the line manager is pressed by the company management and ends with: ‘I couldn't to her work. She can take all the money that goes with it.’

Here we also witnessed the mixed feelings in these hierarchical relations and, since operator recruitment had been done by the company, we asked to include the line manager in the study and permission to address her during the observations.

CONCLUSIONS

In the process of analysing data collected in non-participant fieldwork in a garment factory shopfloor, we have extracted lessons associated with each theme in the thematic analysis that were used by the researchers to create rapport (mostly by respecting participants and a sub-culture) and to seek to guarantee ecologically valid data through appropriate behaviour, through crafting activities and through crafting bespoke materials that echoed the value constellations we encountered.

User research data thus informed what to design for the specific context, but also how to engage in codesign in this same context. We were able to operationalise the lessons learned in a different research project, with a different group of people, and for the purpose of designing a different artefact. The lessons are likely not generalisable to all contexts, but analysing the research context’s underlying values could steer and improve the design research process in terms of researcher’s **behaviour, methods** employed and **materials** created.

ACKNOWLEDGEMENTS

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DECODING DESIGN BRIEFS: THE ROLE OF ABSTRACTION LEVELS IN TEXTUAL AND VISUAL STIMULI

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ABSTRACT

This paper investigates the role of stimuli and respective levels of abstraction in design briefs and the implications for client-designer expectations alignment. This paper examines design briefs in professional settings in two Danish companies, from the perspectives of the client who creates a brief and the external designer who responds to a brief.

The method consists in analysing the design briefs and categorising content, type of stimuli and level of abstraction, followed by interviews with the sender and receiver of the brief. According to the findings, the definition of a clear solution space in the design brief occurs when there is a coherent relationship between the level of abstraction and the presented type of stimuli, which optimises resources in concept development. When coherency is not achieved, that is, when different stimuli are included with the incorrect level of abstraction that allows for broad interpretations, it is counterproductive.

INTRODUCTION

Often, a design brief is the first document and legal contract in the professional collaboration between a client and an external designer. It is a transfer of important content, among others aim, objective, specifications, and desired design DNA (Dewulf et al., 2012). The client needs to create a design brief that clearly frames and communicates the intentions for the product to be developed. This must enable an external designer to translate the client's vision into design concepts that reflect the desired product and aligns with the company's values and existing portfolio. Accordingly, the design brief and its content play a crucial role in the process of developing a new and successful product.

In the design brief, the client can describe the content in various ways which influence the designer's framing and interpretations of the solution space. It includes utilizing different stimuli to inspire and nudge designers onto certain paths towards a specific outcome. If stimuli provide too much limitation to the conceptual space, it can cause a blockage defined as design fixation (Jansson and Smith, 1991). Very few studies focus on actual in-use stimuli in design briefs transferred between a client and executing designer. Researching the design brief as a collective element of stimuli that can become a factor of design fixation is a question which has been called upon in recent research (Ruiz, 2020, p.145).

This paper investigates the role of stimuli in the process of communication via the design brief (message) between the client (sender) and the external designer (receiver). The inquiry assesses how stimuli in the



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design brief can ensure that clients and designers share a common vision to promote an alignment between intended design outcomes and developed products.

We address this phenomenon by building upon prior research to answer the question; ‘what makes a good design brief’. This includes how companies incorporate and use stimuli, whether consciously or unconsciously, and what effect it has on the external designer. This will be conducted by comparing existing theory on stimuli and design fixation with an analysis of two case studies on design briefs: one considering a client perspective and another considering an external designer perspective.

The goal is to address the following research questions:

1. What is the role of visual and textual stimuli in a design brief?
2. What effect do stimuli and respective abstraction levels play in defining a solution space in a design brief?
3. How do expert designers perceive and use design stimuli in a design brief?

The aim is to highlight the importance of the different elements of a design brief in a professional client-designer relationship. The results aim to unravel the specific type of stimuli that enables clearer communication of intended product DNA and solution framing in the design brief in order to reach a more effective collaboration.

LITERATURE REVIEW

DESIGN BRIEFS

It is common in design practices to innovate and create designs that deviate from current market trends (Ruiz, 2020). Client-designer partnerships (Wever et al., 2019) are formed to avoid the same team identifying the problem and executing the design development process. In such cases, the design brief becomes a point of transfer between two professional parties (Dewulf et al., 2012, pp. 458) and thereby an exchange of the company’s vision and product objectives.

The design brief stands as a starting point of the process but is also a way of directing the design efforts, framing and/or reframing of a project scope (Koronis et al., 2019). Given that research has shown that how designers frame a problem influences the outcome and path to it (Dorst, 2015), the design brief becomes critical in defining the problem space for such framing. Miscommunicating the vision, aim and thereby desired product DNA in a design brief might result in wasted time and cost. According to Petersen and Joo (2015, pp. 15) “concept development reflects only 5 percent of development costs, yet influences 70 percent of the final product cost, using a design brief to translate

management criteria into measurable and actionable design concepts is critical.”

Although design briefs are of high importance, current research still debates the contents that create ‘a good design brief’. Several factors have influence on this, but one of the main ones is that every organization and individual has created their own subjective brief-format, which is often a hybrid of different strategies (Read and Bohemia, 2012). Another is because the clients are inexperienced in creating clear design briefs and communicating their vision and ill-defined problems (Koronis et al., 2019). Research on the topic has proposed different approaches, including well-defined and structured checklists containing aims, deadlines, stakeholders, objectives etc (Phillips, 2004, pp. 28-48). Brown (2009) proposes the opposite and argues that keeping a certain level of ‘fuzziness’ can add a more experimental and positive transformational effect. Furthermore, Brown highlights that the fundamental factor is the precise aiming of the design brief and the significance placed on the design aspect both in the project and the organization itself.

Accordingly, there is no “one-format-fits all” and both formats can be suitable depending on the organisation’s predefined aim with the project.

The present research inquires further into the contents of design briefs and how they influence the client-designer relationship.

IDEATION PROCESS IN DESIGN KNOWLEDGE DOMAINS

Ideation is rooted in the individual knowledge of each designer. This knowledge could originate from background experiences, developed skills or design repertoire. Purcell and Gero (1992) highlight that this knowledge can originate from two main sources: intentional learning or everyday/incidental experiences, wherein the first is expected of expert designers. However, this knowledge can also originate from different stimuli available to them – both internal and external. The internal stimuli are expressed in mental images and verbal descriptions rooted in the memories of the designer. The external is the physical surrounding stimuli available, for instance verbal, audible and pictorial information in a brief. Both types have proven to have a huge impact on the development process in early design phases (Eastman, 2001).

According to Gonçalves et al. (2012) stimuli can be represented in different domains but are often separated into two: inside- and outside-domain. Inside-domain represents stimuli which directly or indirectly related to the problem or solution space of the project. Outside-domain is when the stimulus is far from the problem or solution space. Each of these stimuli domains operates on different levels of abstraction. Christensen and Shuu (2007) demonstrated that the inside-domain is known to

provide a narrow solution space in the ideation phase and therefore a low level of abstraction. Conversely, outside-domain allows the designer to collect inspiration from other contexts which opens the solution space and more divergence in ideation, and this requires a high level of abstraction. Research on this was conducted by Plucker and Beghetto (2004), which concluded that there must be a balance between the representations of the two domains in the ideation phase to make high-value concepts. Furthermore, their results indicated that a higher abstraction level is created when searching outside the domain and is very helpful in divergent phases. A lower abstraction and more domain-specific approaches are valuable in convergent phases. Gonçalves et al. (2012) summarises these lower and higher levels of abstractions as follows:

“Searching for similar solutions to a design brief offers an overview of what has been done and what remains unexplored and may be the first step to originate diverse ideas. However, a broader perspective of the problem and an appropriate choice of information brought from another domain can support creativity.”

Most research on this topic has been conducted on design students or novice designers in a laboratory setting. Gonçalves et al. (2014) have shown that there is a difference between the design thinking process of expert versus novice designers. Expert designers will have acquired more knowledge within different domains over time. If a designer is very knowledgeable in a certain domain, they will most likely come up with more creative outcomes than a designer with no knowledge of the field (Nickerson, 1999). Expert designers are also solution-focused and have a clear structure to which they approach a design problem in the early ideation phases. It is therefore relevant to look into the perception of the stimuli in a design brief and how they value and use in a professional and relevant context.

THE EFFECTS OF TEXTUAL AND VISUAL STIMULI

Inspiration can be defined as “when a designer experiences a stimulus or more which makes them want to create something based on that stimulus” (Oxford Dictionary, 2022). Much research has explored the creative ideation process of designers and approaches to design problems in the early design phases. More of them have concluded that exposure to external stimuli can have a dual effect on this process - both positive by creating diverse and creative solutions (Goldschmidt & Sever, 2010), but also negative by replicating existing features and limiting the idea generation process (Jansson and Smith, 1991). This negative effect stimuli have on the designer is also called design fixation.

The effect of design fixation was proposed by Jansson and Smith (1991) which sought to highlight the impact that access to certain stimuli could have on the design

process and product outcome. They presented two groups of design students with identical design briefs, and only one group was given an additional illustration of an existing solution to the problem as well. Their results proved that designers provided with an additional illustrative element, picture or drawing along with their statement of a design problem, constructed very different designs than the focus group, including elements from the provided illustration. Their conclusion was that design fixation is a hindrance to conceptual design development and prevents the designer from using their own acquired internal expert knowledge.

Through the years further research based on Jansson and Smith’s findings has been conducted with different stimuli variations to explore similarities. A study (Gonçalves et al., 2012) has shown textual information to have a similar effect to visual design fixation. Designers provided with fragments of stories, poems or factual descriptions created designs influenced by the contents of these texts. In addition to this, Malaga’s study in 2000 tested and compared both text, pictorial and text-pictorial stimuli, which proved that more creative ideas were developed by the designers with only visual stimuli. This made Malaga suggest that textual stimuli contribute to design fixation more than visual. But on the contrary to Jansson and Smith, Malaga argues the positive effect of visual stimuli.

Expert designers respond the strongest to visual and pictorial stimuli (Gonçalves et al., 2014). According to the researchers, one of the reasons for this was assumed to be that perceiving and decoding visual information is faster and more effective in a professional context where these factors as time constraints are of the essence. Furthermore, designers are highly visual thinkers and are taught to create visually and physically.

These external stimuli, both visual and textual can be placed in domains relevant to the problem statement or outside the problem domain. This will place them on different abstraction levels. Researchers (Purcell and Gero, 1992; Gonçalves et al., 2012) conclude that when the stimuli come from outside the domain, it creates a high level of abstraction while expanding the creativity of the designer. However, if the abstraction reaches a certain level the designs become too unrelated to the problem-frame, and thereby unusable. On the other hand, stimuli strictly within the domain create a lower level of abstraction and might result in more fitting designs with valid working principles, but also restricts the designers’ creativity, and limits their ability to innovate. According to Ezzat et al. (2020) designers provided with stimuli examples with high levels of abstraction are forced to search outside domain which mitigates the fixation risk. On the contrary designers provided with an example with high specificity will



affect them more and most likely force them to stay within the path of fixation.

Very little research was found on the relationship between design briefs and design fixation. Ruiz (2020, p. 145) calls for further research on this subject. According to Crilly's study on fixation and creativity in concept development (2015), which interviewed design professionals, the design brief and the cost of exploring a large solution space are factors that encourage fixation.

This paper seeks to explore the lack of the client-designer dimension to the empirical data, by considering the effects of the elements in a design brief in promoting creativity or design fixation.

CASE SELECTION

CASE CONTEXT

The data collection approach consisted of in-depth case studies of two Danish design companies, here denominated Company A (client) and Consultancy B (external designer). The data was collected at both companies by two of the authors over the period of four months. Both companies granted access to former design briefs for the purpose of this study as well as the option of informal interviews and close-hand collaboration with professionals who create design briefs and who use design briefs as part of their daily activities.

Company A is a Danish design company specializing in Scandinavian interior design, with a product portfolio consisting of soft and hard furniture, lighting, and accessories. Their customer spectrum expands from hospitality and contracts customers to the consumer market. With a Scandinavian contemporary design approach, they aim to create design classics with a "New Perspective", which is a notable part of their product DNA. This is achieved by handpicking external designers for their development process, where they look for a gimmick or new framing of the problem. Company A has inhouse design managers to identify problem scopes and develop briefs, as well as product developers for production preparation.

Consultancy B is a Danish design consultancy consisting of a small team of senior product designers, specializing in design, form, and usability for the healthcare industry, however having a lot of design experience in other fields as well, including speaker design and electronics. They prioritize long-lasting client-relations and close collaboration during development processes to ensure the best possible outcome when solving complex problems. Consultancy B acts as an external designer and receives design briefs from clients to proceed with product conceptualisation and development.

CASE SELECTION: DESIGN BRIEFS

To investigate the topic of how the type of stimuli and abstraction levels in design briefs are set in a professional client-designer relationship, one design brief from each case-company was selected. Prior to the selection, five design briefs from each company (10 briefs in total) were collected, read, and assessed. This was conducted to get prior knowledge of the construction and contents of the briefs. Furthermore, they were assessed based on their content and problem scope to select two design briefs with common traits, which both represented a 'typical brief', respectively, and to ensure a basis of comparison for deeper analysis. The cases are both in the category of interior consumer products, with comparable requirements to design, function, and technical aspects.

The selected design brief made by Company A called for the design of a lamp. This brief was chosen to investigate the intentions determining the content of the design brief in relation to the envisaged solution space. This data provided insights from the client's perspective.

The selected design brief handed over to Consultancy B by a client called for a loudspeaker design. The objective for analysing this brief was to investigate how the elements of the brief are perceived and valued by an expert designer. This data provided insights from the external designer's perspective.

METHOD

DATA COLLECTION AND ANALYSIS: DESIGN BRIEFS

Both design briefs were analysed through labelling with different classifications at different levels, all of which were colour coded to create an overview. The results were translated into models which were then analysed to find insights.

The analysis encompasses three levels (summarised in Table 1). Firstly, the overall content of the design brief is organised under the three categories defined by Petersen and Joo (2015, pp. 16-17) strategy, context, and performance. Secondly, we classify if the type of stimuli presented is visual or textual. Thirdly, we define four levels of abstraction to assess the degree of fuzziness of the information in design briefs.

Table 1: Levels of classification for the elements in a design brief.

Levels	Procedure
Content	The content in each of the briefs was thoroughly read and divided into the following topics: Strategy, Performance and Context.

	Information outside these three topics was not accounted for (formalities etc.). <i>Colour-coding: blue, yellow, and red, respectively.</i>
Type of stimuli	Within the identified content each information was categorized into the two main stimuli types: Visual and Textual. This was based on their graphical representation in the briefs. <i>Colour-coding: Purple and dark blue.</i>
Level of abstraction	Each stimulus was assessed based on level of abstraction. The abstraction level was influenced by the degree of interpretation, domain placement and information frame. <i>Colour-coding: Different gradients of green (from light to dark).</i>

The four abstraction levels were established as follows:

1. Very abstract: Far from the problem-domain. Requires a high degree of interpretation to activity use in development.
2. Abstract: Contextualized abstract. It relates to something in a related-domain, but outside the context of use. Requires some degree of interpretation to activity use in development.
3. Specific: Solution-space is defined. It does not require a high level of interpretation. However, the quantified solution is not given.
4. Very specific: The solution-space or requirement is given and is directly measurable.

The analysis of the design briefs categorises information per page. The labelled content and visual stimuli unit is one image, and the text stimuli unit is equivalent to ten lines of text. Levels of abstraction were measured by the number of sentences and images, as each sentence was read and understood individually, opposed as to a collected text section which could contain different abstraction levels.

FOLLOW UP DATA COLLECTION AND ANALYSIS: SEMI-STRUCTURED INTERVIEWS

The analysis and findings from the design briefs were supplemented with semi-structured interviews with the design manager from Company A who created the analysed design brief, and the senior designer and founder of Consultancy B who worked on the analysed design brief. This step was done to extract verification

or contradiction of the findings, and furthermore acquire a more in-depth understanding of thoughts and experiences behind creating and using the design briefs.

Prior to the interviews, common questions were formulated regarding the content and some specific for each company (e.g. “What do you find most important in the brief?”, “Where do you see the design DNA of the client being mirrored in the brief?”, etc). The interview was conducted starting with the questions, progressing into a reflection over the content of the design briefs, and a reflection over the analysed content of the design briefs. Both interviews lasted about 60 minutes and were recorded and later transcribed to deduce insights to complement the design brief analysis.

ANALYSIS OF DESIGN BRIEFS

TYPE OF CONTENT IN DESIGN BRIEFS

The results of the quantification and categorisation of the information on the design briefs were visualized in figure 1 and figure 2. The diagram illustrates the link between the layers as they depend on each other.

Figure 1: Levels of information in the Company A design brief.



Both diagrams show that performance is the dominant topic (Company A-brief = 40%; Consultancy B-brief = 55%). This class of content informs about the requirements of which the designers are expected to utilize the most. The remaining two topics (strategy and context) are valuable for the overall perception of solution-space and company core values.

The diagrams are very different on almost all other parameters, however. The Consultancy B-brief contains less information regarding company strategy and context than the Company A-brief, and overall a less



even distribution of the three topics. This could be a result of the well-established partnership between Consultancy B and their client, which allowed them to limit information about the company's DNA and values.

Figure 2: Levels of information in the Consultancy B design brief.



VISUAL AND TEXTUAL STIMULI

The two diagrams reflect that both briefs include roughly evenly distributed textual and visual stimuli. According to theory, visual stimuli have the strongest effect on designers as it is faster to decode and translate into other types of visuals. Still, both briefs contained 52% textual stimuli that described the performance of the design, most of it classified as very specific or specific, which indicates requirements to be met.

From the execution of classifying the combination of stimuli and levels of abstraction, it became clear that textual stimuli are generally more abstract than visual stimuli; it is "harder" for the brain to process and translate text into a visual outcome contrary to translating visual stimuli to a visual outcome. This potentially means that textual stimuli might allow for a broader solution-space, with more possible interpretation directions that are not as fixed as visual stimuli. A finding from this could be the benefit of using textual stimuli when describing broad open solution-spaces. This is instead of using visual stimuli examples to describe the same, which is often seen in e.g., moodboards and styleboards.

LEVELS OF ABSTRACTION

According to theory (see section 2), a design brief should include a balanced use of inside- and outside-domain, hence making use of stimuli of both low abstraction and high abstraction. The diagrams (Figures

1 and 2) do not specify the content, only the levels of abstractions. Both design briefs feature all levels of abstraction.

In Figure 1 we can depict that the Company A (client) design brief included 100% very specific visual stimuli in performance, which was furthermore inside-domain. This could indicate that they had clear and precise communication regarding their desired product language and did not allow for the designer to explore too far off the given frame. On the contrary, the strategy section of the Company A-brief featured mostly abstract stimuli, both visual and textual. In terms of company DNA and implementation strategy they were unspecific and left a large solution-space to be explored.

The Consultancy B (external designer) design brief (Figure 2) shows that the performance content is built upon a combination of abstraction levels and is not as specific in their communication of this. This could indicate that the solution-space was meant to be broader and therefore defined with stimuli with high interpretation possibilities. Additionally, the visual stimuli included both inside-domain and outside-domain pictures. Conversely, most of the strategy content was specific in both textual and visual stimuli. This could be an indicator that the client was very aware of their company DNA but perhaps not in their desired product language and could be seeking something abstract and new.

Although the design briefs described somewhat similar products, they did not have any relation to each other, and the analyses were separated in two individual cases. The insights from the interviews were included in the following analysis with the purpose of adding another layer of understanding on the role of stimuli in the design briefs.

ANALYSIS OF INTERVIEWS ON THE ROLE OF STIMULI

THE COMPANY A DESIGN BRIEF: NARROWING THE SOLUTION SPACE

The writer of the Company A design brief is a graduated designer with 5-10 years of experience in formulating design briefs for external designers. Formulating the brief includes preparatory work, such as investigating market positioning, portfolio opportunities and gaps, finding the "right" external designers, and specifying which requirements of the new product-design were fixed and which ones were open for interpretation.

From the overall read-through of the design brief and the follow-up interview, it became clear that Company A knew exactly what type of lamp they were looking for; they had a straightforward solution-frame with strong arguments for the reasoning of the new product: a) to position themselves stronger on the market; b) to

expand a product family with a ‘cousin’ to an existing product in their portfolio; c) to create a product with a simple expression; d) to be produced using rotational spun aluminium; and e) featuring a specific light source. The certainty and confidence in the preparatory work were apparent in the design brief as well and thus verified the analysis. Company A was subconsciously aware of the opportunities and consequences of different levels of abstraction in their design brief. As a result of this awareness, they intentionally included very specific stimuli, thereby providing the external designer with a narrow solution-space within a specific frame of the design task. They highly influenced the output of the design proposal to make it fit their visions and thereby also their desired product language fitting of their portfolio. This is apparent in the visual stimuli represented under the performance content, which refers to the headline “Typology + appearance references” in the brief. The section consisted of four pictures of simple, rotational spun lamps, which was coherent with their desired solution space.

This implicit understanding of what a designer values and what actively inspires them onto certain paths, gives Company A an advantage in terms of creating a specific and well-communicated brief. The design manager at Company A described it as such:

“I include what I imagine the designer could use to understand what we want from them. (...) I mean, if I were the designer on this, I would benefit from this page the most [referring to “Typology + appearance references”]” (Company A 00:41:52)

Regarding the abstraction level, the design brief contains the tagline “new perspective”, as a part of the strategy content, classified as very abstract. “New perspective” is a cornerstone in Company A’s design DNA, and it was implemented as very abstract and abstract textual stimuli as well as one page with outside-domain very abstract and abstract visual stimuli in the design brief.

Through the interview, it became clear that “New Perspective” is what Company A is seeking by engaging in collaboration with external designers. Therefore, this company’s important core value and DNA were presented at a high abstraction level to provide freedom of interpretation for the solution-space.

“It is well spotted that some of the content is up for interpretation. (...) In reality, new perspectives can be the thing that gives the product a justification on the market of thousands of already existing pendants” (Company A 00:32:33)

By implementing different levels of abstraction tactically according to what needs to be specific and not, Company A ensured that the external designer could work more efficiently. A specific and fixed design brief is not necessarily easier to approach, it is almost on the

contrary, but the workload can be directed to relevant tasks, and it allows for the designer to go more in-depth with detailing instead of spreading out the solution space on locked specifications that are of no use in the end. This indicates that narrowing down the solution-space might be linked to the cost effectiveness of exploring a smaller solution space stated by Crilly (2015).

One could argue that Company A has a good understanding of how the desired design activity should be described, given that Company A makes use of expert designers to conduct the preparatory work and formulate design briefs. However, it was not fully intentional to choose either textual or visual stimuli in the design brief, but if an image can describe an aesthetic or a certain perspective, then the image is chosen.

THE CONSULTANCY B DESIGN BRIEF: MISLEADING SOLUTION SPACE

In the performance topic, there is a headline “Physical product” that contains a mix of textual and visual stimuli either very specific or specific. The content was directly related to the technical considerations, which mirrored the strengths of the client’s company.

The requirements set by the client in the design brief (e.g., sound setup, controls, speaker placement) are very specific stimuli to ensure a narrow solution-space. Consultancy B took the content and stimuli of the functional aspects very seriously as it is the client’s area of expertise.

Conversely, the “Material/shape board” headline only contains visual, outside-domain stimuli, classified as very abstract and abstract. The content is related to aesthetical considerations regarding appearance, form, and texture. It opens a wide solution space and invites various interpretations and creativity. The client did not have expertise in this area, but with this board attempted to outline a solution-space by seeking innovation on aesthetics. This made the designer unable to assess a concrete framing and focus on an ideation direction for the product language, which correlates to the findings by Ezzat et al. (2020) wherein a higher abstraction level mitigates fixation risk. However, it became a hindrance, since the brief pointed towards a wildly mixed aesthetic appearance that Consultancy B, through their agelong relationship, knew was too ambitious and out of reach.

“They [the client] have some sort of ambition that “sound” is their driver. And then when they present a brief like this for us... The way they give us freedom, it is not actually there because they are limited by their own production and their approach to their markets. So, there are some aspects, both visual but also because of ambition, that sets the bar falsely.” (Consultancy B 00:05:53)



The consequence of this was that Consultancy B rarely looked at the shape board and found the visual elements themselves. They used their design expertise and knowledge within this area and made use of their internal stimuli that have been built up over the years working with this client. They identified the contradicting elements between the provided design brief and the DNA of the client company. In the end, this could seem like wasted resources from both parties on producing and processing stimuli that were not useful. Consultancy B came up with concepts that derived from the board, but they were quickly deselected by the client, as they expected. Generally, if the client does not have any specific and concrete input to the aesthetics, Consultancy B would rather have the client use their resources solely at communicating their areas of expertise and correlating fixed requirements (e.g., the technical aspects).

CONCLUSION, IMPLICATIONS, AND DISCUSSION

CONCLUSION

In a professional client-designer relationship, expert designers are influenced by stimuli communicated in design briefs. A design brief defines both a problem and a solution-space and by doing so allows a client to intentionally direct the designer towards the desired outcome in accordance with their company DNA and product language.

The findings in this paper indicate that in a professional context, the relationship between stimuli, abstraction levels and negative effects of design fixation cannot be described as simply as previous experimental research states. There are instances where a high level of abstraction in a stimulus can be misleading or opening the solution-space in ways that are not effective (e.g. time of development, cost, etc.) for the client-designer relationship. Therefore, we believe the correlation between the level of abstraction of stimulus and the level of fixation mitigation reported by Ezzat et al. (2020) must be situated. Furthermore, we found that the interviews enable a reflection upon the role of stimulus in a professional setting. Such method enables a thematic overview to be established and is similar to the method used by Crilly (2015) to characterise fixation as a collection of situated factors influencing concept design and product development rather than just a single negative concept.

This research paper has provided one of the first views into this topic by analysing two case studies of two Danish design companies, one from the client perspective (sender) and the other from the external designer perspective (receiver).

Companies can positively define a solution-space by using specific stimuli tailored to their aspirations, envisaged design language and in coherence to their

company DNA. This study shows that specific stimuli can be used as an effective way to increase efficiency and force the designer to focus on what matters the most. On the contrary, clients can invite the designer to be creative and innovative by defining an open solution-space with abstract stimuli on the required topics the client wishes to explore.

The negative use of stimuli in a design brief occurs when the solution-space is described as too abstract in different domains. This can compromise the designer's ability to focus on the envisaged domains. Using visual stimuli with a high abstraction level, might result in unclear design briefs with too many framing directions, thus making it harder for the designer to make a good framing fitting of the client. This results in wasted time and resources on both sides. Furthermore, it could generate product designs which clash with the company's DNA or existing portfolio which evidently would cause an undesirable market positioning.

Furthermore, this paper has provided insights into what the executing designer values and priorities to be included in a design brief. Findings indicate that designers call for specific stimuli and a precise problem scope. The designers have expert knowledge which they apply during ideation after they receive a design brief. When it includes too much abstraction not well accounted for, such elements in the design brief are regarded as superficial and almost useless.

IMPLICATIONS

This research has provided insights into the effect of stimuli and respective abstraction level in design briefs and thereby indicated how these can be used actively in the creation of design briefs. An understanding of the effects of abstraction levels and type of stimuli is a valuable tool for clients as well as designers in their partnerships. Some of these overall findings can be translated into initial baselines for creating a brief.

Based on the methodology of this research, it was possible to derive numerous findings from the data set; more than what has been discussed in the scope of this paper. This opens further research on the topic under three main directions. Firstly, on the graphic layout of a design brief. When analysing the design briefs, it became apparent that the graphic layout potentially made an impact on communicating stimuli. The following research questions arose: Does the size of visual stimuli have an impact on the interpretation? How does the text size impact the perception of the stimuli as "text" stimuli and not visual stimuli? How does the addition of headlines to pictures affect the perceived abstraction level of said visual stimuli? Introducing information design and interaction design knowledge into the analysis could provide another layer to this research to get a deeper understanding of the role of stimuli in design briefs.

Secondly, the cooperation between designers and engineers. The hand-over of a concept design from the external designer to the client is critical for delivering design DNA and important details. The interviews indicated that many important details often get lost in this process. How to hand-over a design between two professional competencies without losing design DNA and finding the best design compromises?

Thirdly, the assessment of the level of abstraction in the different stimuli before delivering the design brief. Based on our research, there is the possibility of creating toolkits that assess the abstraction level and stimuli to be used in professional settings, during the creation of design briefs. It could enable clients to use stimuli according to the specific intention of the company, and thereby better establish both the problem- and solution-space for creative exploration. This would support the company in testing out different innovation directions while remaining truthful to its own DNA.

DISCUSSION

As stated in theory, design briefs are different and depend on a lot of variables. As this research was only based upon two unrelated case studies, the results from this would need further verification from larger studies, possibly where the data collection is more specific on fewer variables than included in this data set.

Alternatively with the addition of studies where the same design briefs are followed from development by a client through the briefing process and final read and implementation by the designer.

An area of discussion is whether it is possible to split textual and visual stimuli from each other. In the analysed cases, the visual stimuli came with a short textual explanation or a headline to set the context of the visual stimuli. This might indicate that there might occur different levels of co-dependency between each other. A visual stimulus alone can be perceived as one thing, but by adding a written description, word, or headline could shift the perception.

Another layer of analysis is the psychological dimension of stimuli perception, which is not accounted for in this study.

Lastly, this study only provides a specific insight into the design brief itself as a communication element. However, the whole briefing process includes other steps. Through the data collection, it became evident that debriefings, meetings, edits of the brief etc, assist in shaping the 'good design brief'. Furthermore, most clients and designers schedule meetings when the design brief content is unclear, and a new common understanding is created. Taking the whole briefing process into account might provide further nuances into the role of stimuli in design briefs.

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EXPLORING THE POTENTIAL ROLE OF DESIGN TO REFRAME THE RESOURCES AND THEIR INTEGRATION IN THE PATIENT EMPOWERMENT PROCESS: THE EXAMPLE OF A PATIENT JOURNEY ANALYSIS IN CHRONIC CARE

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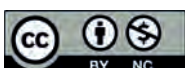
ABSTRACT

Chronic illnesses require comprehensive management of various resources to improve patients' overall health during their lifelong journey. As resources are dynamic and evolving concepts (Vargo & Lusch, 2008), patient empowerment process could enable the identifications and integration of resources to advocate of patients needs by assisting in reframing them through value co-creation and destruction. The patient empowerment process framework and one patient journey were created and used to identify the resources and to recognize the key moments of resource integration during the patient journey. The resulting patient journey map with an integration of a patient empowerment process framework was used to reflect on the role of service design in identifying fundamental gaps in

integrating resources and facilitating empowerment processes.

INTRODUCTION PATIENT EMPOWERMENT AS A PROCESS

Patient empowerment is an essential process that enables patients to gain more control over their health and daily lives (Anderson & Funnell, 2005). Empowered patients can assess their health better and make informed decisions by sharing their experiences and information with healthcare providers (Colombo et al., 2012; van Uden-Kraan et al., 2009). Gibson (1991) suggested that patient empowerment is a process that helps individuals develop their inner capacities to recognize and solve their own problems, mobilize relevant resources, and utilize their knowledge to address their needs and adjust their resources. Since then, various similar concepts such as patient engagement (Thomson et al., 2005), patient activation (Hibbard et al., 2004), patient involvement and participation (Agner & Braun, 2018; Castro et al., 2016), and patient enablement (Hudon et al., 2010) have been associated with patient empowerment. Although these concepts share similarities, they have different



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meanings. These concepts represent an ongoing process, as shown in Figure 01.

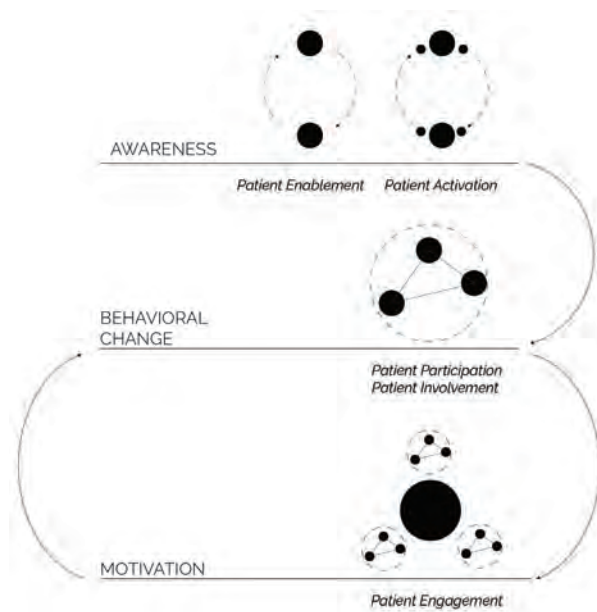


Figure 1: Patient Empowerment Process

The awareness stage is associated with patient enablement and patient activation. Patient enablement involves gaining an increased awareness of one's health status, which is associated with health literacy, and acquiring skills and knowledge to participate in healthcare (Chatzimarkakis, 2010). On the other hand, patient activation is the process of growing awareness of having an essential role in one's healthcare situation and focuses more on specific goals (Hibbard et al., 2004). It is about having goals on more specific domains, and answering questions like "Do you know why you are supposed to take this medication?" (Fumagalli et al., 2015).

The patient empowerment process can then be continued by related with personal change, which includes patient involvement and patient participation (Castro et al., 2016). Both concepts involve an established relationship and collaboration with the healthcare provider (Sahlsten et al., 2018). Patient participation focuses primarily on shared decision-making (Sahlsten et al., 2008), which means interacting with healthcare providers and contributing one's opinion to the decision-making process (Bravo et al., 2015). Patient involvement, on the other hand, includes aspects of self-management and self-care (Hickmann et al., 2022), which refers to the actions individuals take to maintain and improve their own health status (Anderson & Funnell, 2010).

Patient engagement is related to motivation and helps patients discover their own sources of power, evaluate

options, and make choices (Clancy, 2011). Having motivated behaviors leads to behavioral change, which means these two stages could be an iterative process.

Given the fundamental role played by both the enablement of patients' own resources and the subsequent access to relevant internal resources through patient empowerment processes through these nested concepts, this paper applies the notion of "resources" articulated by the Service Dominant Logic paradigm as a theoretical lens (Vargo & Lusch, 2016).

RESOURCES AND RESOURCES INTEGRATION

Understanding the role of resources and their integration has attracted much attention (Kleinaltenkamp et al., 2012; Ostrom et al., 2015), as resource integration is considered an important key factor for value creation from the perspective of the Service-Dominant Logic (SDL) paradigm (Mele et al., 2010; Peters, 2016), which emphasizes the importance of services, interactions, and relationships between customers and companies in creating value (Vargo & Lusch, 2008).

Service-dominant logic identifies two different types of resources: operant and operand resources (Vargo & Lusch, 2004). Operant resources refer to intangible resources such as technologies, knowledge, and skills (e.g., health literacy and self-care skills), while operand resources refer to tangible resources such as materials (e.g., medicines) and places (e.g., hospitals). Resources are not only represented as tangible or intangible, but they are also defined as the result of a continuous process (Payne et al., 2008) and can be defined as "contextual" and "becoming" (Koskela-Huotari & Vargo, 2016). They are contextual because they are organized by regulative (rules, laws), normative (norms, roles), and cognitive (shared beliefs, understanding) functions (Edvardsson et al., 2014), e.g., the understanding of what is "care" depends on the medical and professional culture. As seen in Figure 2, awareness of contextual resources is the foundation for patients to develop the ability to be part of in their own healthcare. This helps patients to identify and understand the resources that are available to them, such as knowledge, skills, and technologies, as well as the regulative, normative, and cognitive functions that organize those resources.

Resources are also defined as "becoming" because they can be changed and activated through interaction with other actors (Koskela-Huotari et al., 2016), e.g., patients can develop health literacy by accessing effective and relevant information materials. Resources are not fixed things and can be configured differently since actors are also considered a possible and important resource and can be part of the resource integration process (Peters, 2016). As seen in Figure 2, "behavioral change" and

“motivation” could be seen as a way of “becoming” a new resource, as individuals acquire new knowledge, skills, and attitudes that enable them to more effectively engage with their environment and achieve their goals. e.g., patients' own motivation to learn can facilitate the integration and application of self-care tools.

Resources do not have inherent value; they only create value when combined with other resources (Chandler & Vargo, 2011; Koskela-Huotari & Vargo, 2016). This means that resources “become” valuable when they are activated and integrated with other resources in a combinatorial process. This paper specifically focuses on the “becoming” of resources and aims to understand how resources can be transformed through a patient empowerment process. Resources have the potential to be reconfigured and integrated into new forms. In this study, we analyze existing resources and explore how they could “become” through design practices.

The purpose of developing this framework is to define the nested concepts in the patient empowerment process to aid in reframing these concepts throughout the process. To better understand the framework, a pilot study was conducted using a semi-structured interview method with a single chronic care patient, based on this conceptual model.

METHODOLOGY

A patient journey map was created based on a semi-structured interview with a chronic care patient. The interview guide was developed from the initial conceptual model of the patient empowerment process, as shown in Fig.02, and focused on the following key research questions:

- 1- What are the essential resources for empowering chronic patients on their healthcare journey? How do patients identify and access these resources?
- 2- What are the critical moments in the resource integration process? How can these moments contribute to value creation or destruction?
- 3- How can we identify the fundamental barriers and drivers in the resource integration process?

The interview transcript was used to develop a patient journey map that was divided into three distinct phases: “before diagnosis,” “during diagnosis,” and “after diagnosis.” Additionally, a thematic analysis was carried out to identify recurring themes that emerged from the patient's perspective during her journey.

The insights from this analysis were then used to reflect on the potential role of service design.

PAPERS THE PATIENT JOURNEY MAP

The interviewee, a 33-year-old woman, was diagnosed with rheumatoid arthritis at the age of 24, which caused

chronic inflammation of the joints and other parts of the body. Her condition affected her ability to move her fingers, hands, and arms, and later caused digestive problems and irrational bowel syndrome (IBS) due to food allergies. Despite facing numerous obstacles throughout her journey of managing the disease, she managed to access and integrate a diverse range of formal and informal resources to effectively manage the condition.

Initially, the patient sought emergency services and expert help to identify her situation, which could be considered as the patient enablement phase. i.e. being aware of the reason why she needs to take certain pills or why she could not use hot water in her condition. She then became an active participant in her own healthcare by seeking knowledge about her condition and questioning predetermined treatment decisions leading to the behavioral change phase, which is associated with the patient participation and involvement, i.e. searching the information from the social media. As the patient gained an understanding of self-management, she became more participated in shared decision making with healthcare providers. Her motivation to gain more knowledge was driven by her desire for power and control over her condition, leading her to seek diverse resources to support her journey. i.e., healthcare providers were not the only resources; care providers, influencers, experts in various fields (health, exercise, wellness) began to become more visible through websites, social media, apps, and even some brochures as resources.

THEMATIC ANALYSIS

Thematic analysis was used to understand how resource integration concept could be used to better understand patient empowerment in her case. Firstly, initial codes were identified, such as “patient education,” “patient involvement,” “being part of the decision-making process,” “information sharing,” “patients' own resources,” “value co-creation,” and “value destruction” to understand the concepts that are nested within the patient empowerment framework with an integration of resources. These initial codes then formed into themes such as “access to resources,” “patient education and information exchange,” “patient involvement in decision making,” and “the impact of patient involvement and resource integration on value outcomes.” These themes led to group and identify the main themes that emerged from this analysis.

Here are the themes that emerged from the single pilot study;



Table 1: Themes that are emerged from the thematic analysis

<p>Theme01. The Importance of Trustworthy and Meaningful Information on Patient Empowerment</p>
<p>Accurate, meaningful and trustworthy information in the chronic care journey played a fundamental role in each moment of the process of diagnosis, management and decision-making of the studied patient journey. It was essential for effective chronic care management and decision-making, enabling continuity of care and enhancing patient empowerment through access to diverse resources.</p> <p><i>“...The thing that I am trying to say that I prefer to involve and know every step in health decisions because it is going to affect my health. I am the one who is gonna live with this situation ”</i></p>
<p>Theme 02. The Complementarity of Resource Integration for Balancing Formal and Informal Support System</p>
<p>The interplay of formal and informal support systems was crucial in supporting the holistic health needs of the patient. The integration and development of both personal (e.g. parents) and institutional resources (e.g. hospital) assisted the patient to reach diverse resource in her healthcare journey. The complementarity of resources from different fields played a crucial role in the patient's ability to effectively manage her condition.</p> <p><i>“...I quickly reached the product because my family worked as health professionals and had contacts. Otherwise, my joint would have been damaged. .”</i></p>
<p>Theme 03. Incremental Process of Patient Empowerment through Resource Integration and Access</p>
<p>The process of empowering the patient involved both value destruction and creation by gradually identifying and bridging the gaps in accessing and integrating the right resources. The process of resource integration for the patient empowerment was clearly a gradual and incremental process, where each step was fundamental to reach the following one, e.g. the diagnosis is a fundamental step to access healthcare resources, which then opens up further search strategies for trustworthy and meaningful resources to the patient's specific needs.</p> <p><i>“My disease can affect a different body part. it can affect my eyes which may cause an inability to see; it can affect my heart which causes many problem... this booklet was explaining... No one told me that before. I knew because I searched ”</i></p>

THE POTENTIAL ROLE OF THE DESIGN PRACTICES TO REFRAME RESOURCES AND THEIR INTERACTION

Service design could support the development of the patient empowerment process that addresses the unique challenges of chronic care by assisting in reframing resources through the lens of patient needs and preferences (Sanders & Stappers, 2014). Mapping available resources through service design practices can identify the resources accessible to patients during the "awareness" stage of their journey, where they noticing (i.e. noticing that something is wrong and being aware of the symptoms), discovering (i.e. discovering the possible centers to get help), revealing (i.e. reaching and understanding the knowledge about diseases) and identifying (i.e. identifying the patterns of diseases). By identifying barriers and drivers, mapping can facilitate the integration and activation of resources for the next step.

During the chronic care journey, patients may destroy the value of existing resources to create new ones through disruption and making, such as by getting health information from social media instead of healthcare professionals, since service design practices could co-create and co-destruct value through co-design, which involves designing healthcare services or interventions in collaboration with patients to create mutual benefits using their unique perspectives, resources, and knowledge (Bruce et al, 2019). Co-design practices enable resources to "become" as they combine the valuable resources of patients and healthcare providers.

Resources can "become" through co-creation and destruction in an ongoing process. For instance, a patient who realizes that provided resources are insufficient may transform resources by using social media to follow other patients and gain knowledge instead of following healthcare experts. However, reaching trustworthy and meaningful information in a complex world is not easy, so the patient may need assistance to map resources around themselves. By allowing the patient to speak up for themselves, co-design practices can assist in mapping resources, enabling the patient to be part of reframing and mobilizing resources. Service design practices could enhance patient empowerment by considering resources as a voice of the patient (Bogaert, 2021), allowing patients to bring their experiences, knowledge, values, beliefs and skills to the process and reshape resources through interaction between different resources (Vargo & Lusch, 2004).

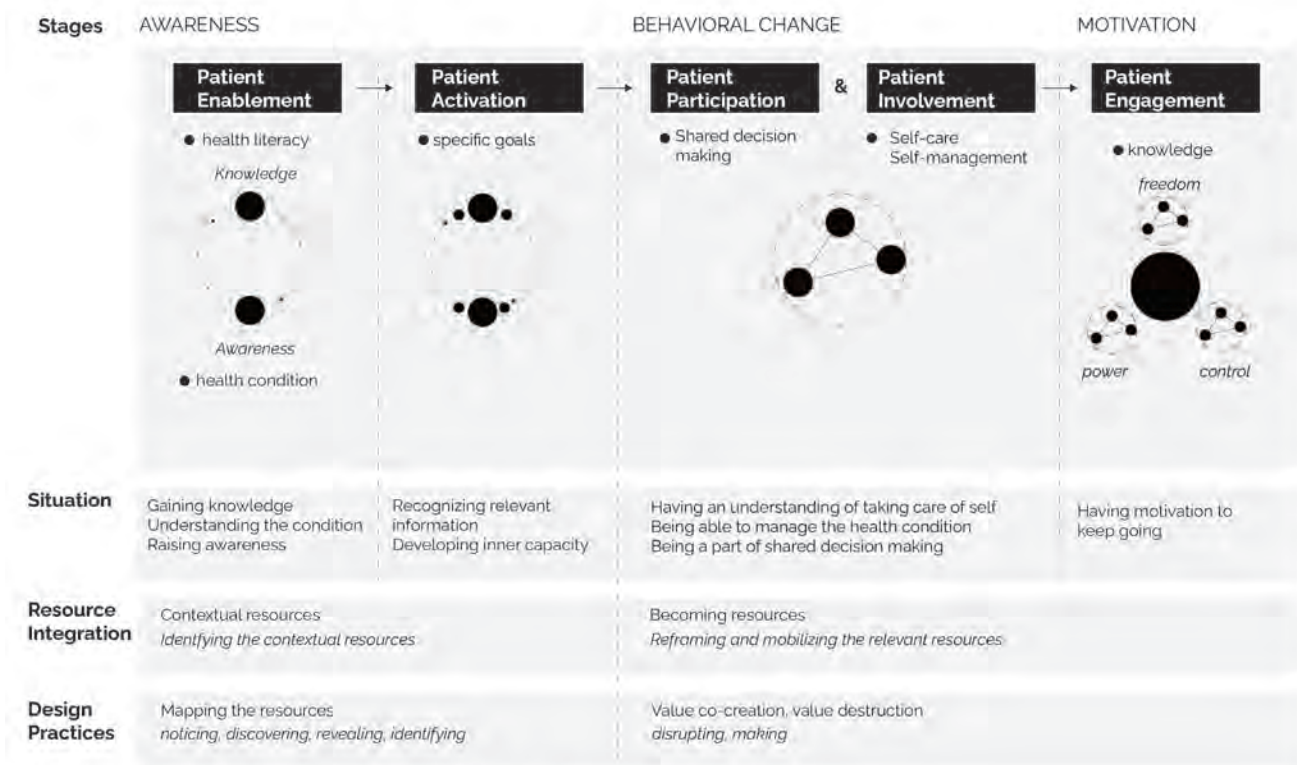


Figure 2: Resource integration with design practices

CONCLUSION

A chronic condition is a long-lasting health condition that typically cannot be cured but can be managed with ongoing treatment and care (WHO). In recent years, there has been a growing focus on patient empowerment in chronic care which has been linked with similar concepts (Figure 1), however, the definition of it is still unclear. This research employed the term "patient empowerment" as an umbrella concept and utilized it as a progressive process that encompasses these similar concepts as stages. Figure 1 shows how these concepts could be interpreted through a progressive patient empowerment process.

Figure 2 provides a detailed overview of the situations that are associated with each stage of the patient empowerment process, as presented in Figure 1. These concepts are interconnected and play a vital role in patient empowerment and the chronic care journey. The purpose of developing this framework was to define the nested concepts in the patient empowerment process in terms of resource integration perspective, in order to aid in their reframing throughout the process. The patient empowerment process in chronic care requires ongoing and dynamic resource integration and access, which could be supported by service design practices. Through mapping resources, service design practices could identify the available resources and the gaps by mapping resources through noticing, discovering,

revealing, and identifying; and then reframing them by disrupting and making.

The purpose of this paper is reflect the potential role of service design practices, particularly co-design, in both creating and destroying value through the patient empowerment process framework (Figure 2) and how it could assist to integrate resources within the patient empowerment process. In order to accomplish this, a framework for the patient empowerment process was developed and a patient journey was analyzed as a prototype, which identified key moments for resource integration in healthcare. This led to the creation of a patient journey map, which emphasizes the crucial role of co-design practices in identifying gaps and facilitating empowerment processes Figure 3. In this case, the patient went through the awareness stage by mapping resources by noticing, discovering, revealing, and identifying them. Then, patient was in a "behavioral change" and "motivation" stages by disrupting and making the resources. She destructed the value and created new one, i.e. keeping in touch with other patients to know what she should eat instead of going to nutritionist or used social media for healthcare knowledge. This complex system could be enhanced by co-creating and destructing value in co-design practices to reveal knowledge, beliefs, values, and skills of patients, resulting in them becoming resources.



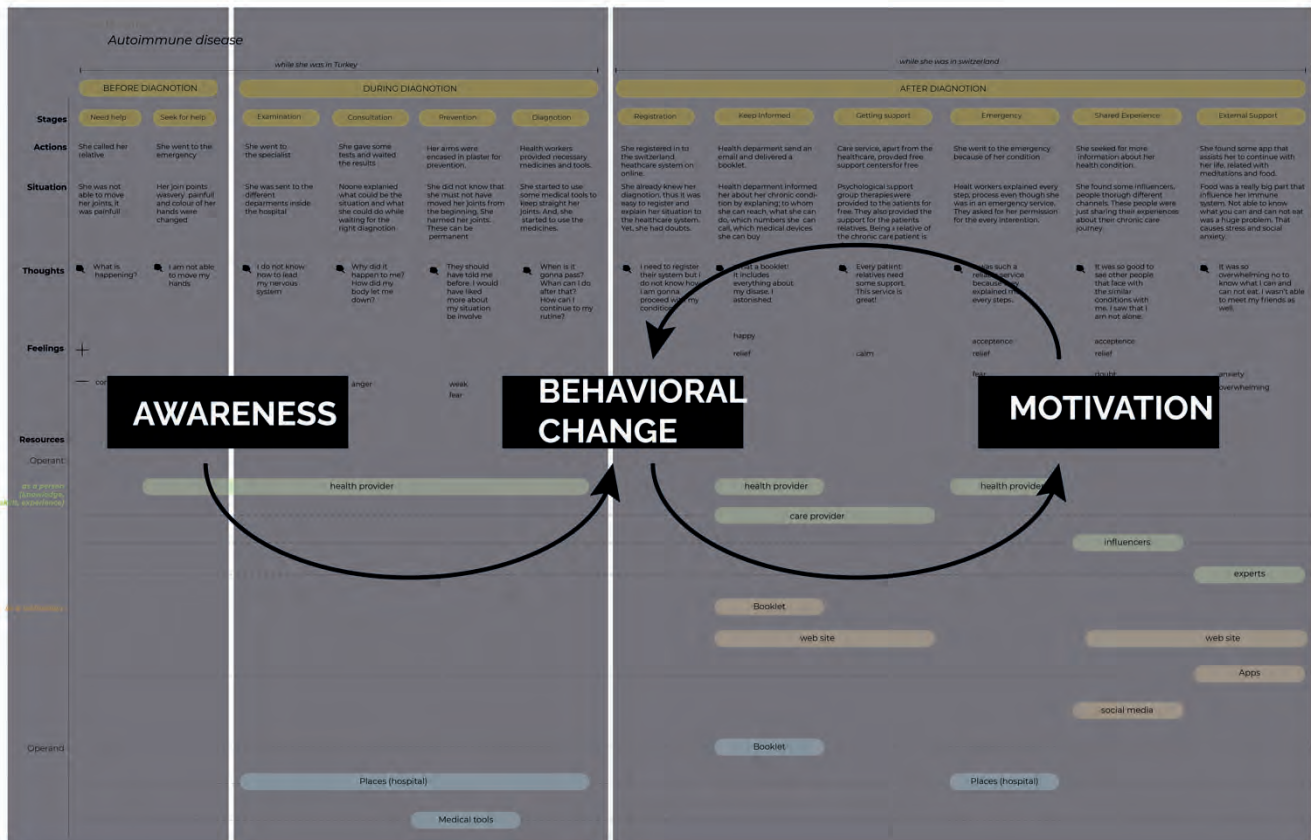


Figure 3: Resulting patient journey map

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HOLDING SPACE FOR WELLBEING: CARE AND ETHICS OF EXCLUSION

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ABSTRACT

In this exploratory paper, we consider how an ethics of care can be applied to designing for health and wellbeing. We start from defining design as a careful assembling around absences and attending to things that are excluded, with the explicit intent of finding alternatives to how bodies are made through design. We discuss the potentials and challenges of holding space for idiosyncratic practices of wellbeing. We show how an ethics of exclusion can be deployed to analyse how we hold space in our own design processes and propose future research pathways.

INTRODUCTION: DESIGNING WHICH BODIES?

Human bodies and practices have always been at the center of design research and human-computer interaction (HCI) (Loke & Schiphorst, 2018). But as researchers in HCI have pointed out (Homewood et al., 2021; Spiel, 2021), the somatic turn has more explicitly put bodies at the center of design. With wearable, implantable, ubiquitous technologies becoming smaller and more integrated in our bodies (Mueller et al., 2020), or in the environments around us (Howell et al., 2019), it matters to ask which bodies are being considered when we design, which ones are being invisibilized, and indeed which (cyborg) bodies are we making when we design technologies.

Design methodologies such as soma design (Höök, 2018) have been emerging to put at the centre how designers perceive to be their own bodies or somas, and how they get reconfigured, with new agencies and subjectivities, through engaging with technology as materials. Homewood et al. (Homewood et al., 2021) have suggested that instead of starting pre-defined categories and assumptions about bodies, designers should have them problematized. Design, through these developments, can be driven by ethico-onto-epistemic

concerns, through which the designer is responsible for how the design process affects the world (ethics), types of bodies or bodily reactions (ontology) that are made tangible, or available to design through e.g. biosensing and datafication, and the research and design apparatus that is built (epistemology).

In this exploratory paper, we look at how design research around wellbeing can be informed by the notions of exclusion and absence, informed by a care ethics (de la Bellacasa, 2011; Hollin et al., 2017). This allows for addressing alternative bodily practices: the personal ways that we know and care for our own bodies, and how these may be incompatible with current technologies and ways of designing technology, therefore creating spaces where more diverse futures with technology can be imagined. Against success narratives of wellbeing, we pause and reflect on the limitations and failures of the design research process. The acknowledgement of failure within design research spurs new directions for challenging the current methodology and addressing researchers' responsibility (Howell et al., 2021).

ASSEMBLING NEGLECTED THINGS

To guide our journey towards considering absences in design, we turn to scholarship in STS and feminist new materialism concerned with highlighting that which is invisible or excluded. There has been an abundance of work concerned with things that do not fit neatly into categories (Star, 1990; Lee, 2022). In particular, we bring to the fore the concept of matters of care (de la Bellacasa, 2011), as articulated by Puig de La Bellacasa, as a design ideal for considering absences.

Matters of Care in particular builds on the STS tradition of analysing technoscientific practices showing how facts are constructed and kept stable through networks of hybrid human and non-human agencies. These analyses have often served to shine light on the importance of subaltern (often invisible) humans behind decision makers (the scientists, or the managers). Taking a feminist perspective on these matters, Puig de la Bellacasa reminds us that the work of sustaining both



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people and objects depends on those that clean, repair, and maintain these worlds as liveable. These are an “active doing”, a practice of caring. These “matters of care” have been historically overlooked, often invisible, gendered, subaltern. Puig dela Bellacasa invites us to engage with an ethics of care, to “assemble neglected things” (de la Bellacasa, 2011), to consider what is routinely excluded from being considered. Designing with care, therefore, should be done.

Below we present a design case study aimed at exploring practices of wellbeing for people with internal reproductive organs which was informed by an ethics of care. We show how an ethics of care and exclusion was used to hold space for idiosyncratic practices of wellbeing, but we also show the difficulties of doing so. These challenges illuminate research pathways for the future.

PROBES AS A WAY TO INQUIRE INTO LIVED EXPERIENCES

In this study, we sought to account for the complex and idiosyncratic wellbeing practices entangled in everyday life. To do so, we designed a protocol to engage in an intimate and long-term conversation around wellbeing with people with internal reproductive organs. This protocol included probes (Gaver et al., 1999), a soma design workshop (Höök et al., 2018), and interviews. The deployment of probes followed the design workshop. This paper unpacks the case of deploying probes to respond care-fully to the previously mentioned absences.

Probes, introduced by Gaver (Gaver et al., 1999), are a design-led approach that utilizes ambiguity to establish a reflective interpersonal multi-layered sense-making process. Their wide adoption in design research means that probes can take many forms combining conceptual interests, technological possibilities, and imaginary scenarios.

Pen, paper, a number of prompts, and four vials to collect materials were in the individuals’ bags to explore everyday care and wellbeing. All materials were open-ended, carefully attending to the diversity of bodies and minds. Keeping the space intentionally open is a challenge imbued with sensitivity. Our design process draws upon feminist perspectives in design (Bardzell, 2010) and acknowledges the subjective and experiential knowledge of the designer as an affective way to understand and explore wellbeing. The probes included a pamphlet that introduced individuals to the design method (Figure 1), a set of vials for material collections and theme cards (Figure 3), and reflection cards (Figure 2). The kit included four themes: relaxation, comfort, nurture, and wakefulness. The themes, informed by the strong concept of somaesthetic appreciation (Höök et al., 2016), were designed to make space to fit individuals’

inward attention and perform outside corrective framings of wellbeing. Instead, they described situations in everyday life that are associated with intimate sensations and care practices. The kit was designed in a way that it could be reused or kept as a souvenir from the study.



Figure 1: The pamphlet of the probes that included instructions on their use and notes from the designer to the participants.



Figure 2: Cards with open-ended phrases addressed to one’s body, selected to prompt reflections on their intimate relation. The phrases were designed to feel like a whispering confession that takes place between partners.



Figure 3: Vials for material collections according to the themes annotated on the label cards.

CARE AS STAYING IN THE TROUBLE

The study protocol was designed care-fully in a way that the central definitions of wellbeing and everyday care were left intentionally blank to empower individuals to contribute with their own identities and definitions. Individuals were asked to collect materials relevant to four themes. Links between the purpose of the materials and the themes were left undefined to fit better into individual care practices. The reflection cards were open-ended phrases aiming to unpack the unspoken thoughts addressed to one's body. The cards included the following phrases: *You make me ...*, *I am confident that ...*, *I am afraid that you ...*, *You look ...*, *What if we ...*, *Are you ...*, *You feel like ...*, *I feel as if ...*

The recruitment of individuals to use the probes in their everyday life took place in Sweden. The recruitment was addressed to people with internal reproductive organs due to their significant and symbolic position in narratives of invisibility and prolonged unwellness (Cleghorn, 2022). Matters of safe space and relatability of experiences were also considered during the decision-making process of the recruitment. The description of unwellness was left intentionally undefined to avoid labelling that might lead to exclusions. In the end, the study intends to explore practices of everyday care outside the medicalized understanding of wellbeing.

Three individuals responded to the call, ages 24-30, and they identified their cultural origins from US/Iceland, Sweden, and Croatia. They identify as Thorie, Alice, and Kylie. The involvement of individuals in participatory research requires a meticulous design to regulate the existence of power dynamics between researchers and participants and protect individuals from unintended exposure to sensitive topics. Prior to their engagement, individuals were informed about the study's objective and the openness of the method. Informed consent was given in written and oral form. Part of the methodically chosen care-full practices in the design process was the establishment of the designer's positionality and intentionality. Staying with the uncertainty of the design method and contributing to the process requires a level of trust between researchers and individuals involved.

RESULTS

The study allowed individuals to create narratives of "everyday care". We were happy with how wellbeing was narrated through creating, establishing, and maintaining rituals of care. Wellbeing practices expand beyond the singularity of the body and the self and might even be a space to discuss the entanglements with more-than-human entities. The element of materiality was integrated into the design of probes as the transient space between the inward focusing of somaesthetic appreciation and the outward expression of sensations.

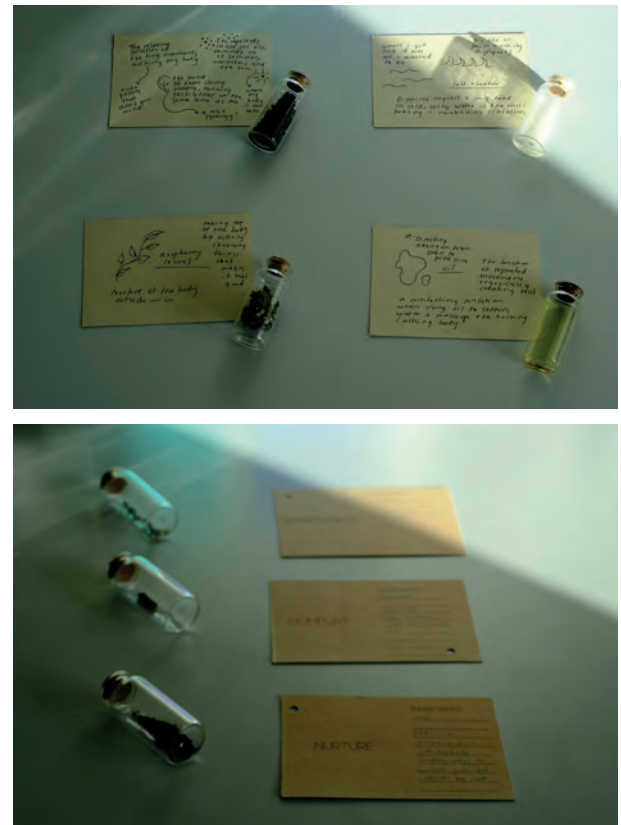


Figure 4: Materials extended the nature of reflections on wellbeing and everyday care practices. The emergence of water and soil as elements for nurture and awakening indicates the significance of co-existence with the surrounding environment to the conversation of wellbeing and care.

Our participants told stories about how healthy lifestyles were associated with exercising and remaining active during the day regardless of individual engagement in such practices. All individuals expressed the importance of self-check-in rituals at different parts of the day to set boundaries with the often-invasive rhythms of everyday life and respectfully set their limits according to the current state of their bodies. The ability to stay present in the moment and in connection to one's body was identified as the ideal state of a holistic understanding of wellbeing.

Our aim in this paper is not to show these in depth, but rather to point at the difficulties of addressing wellbeing in a holistic sense, even with a small group of participants. To do so, we will now highlight some tensions and frictions that came up during the interviews that debriefed the probes study. One participant, Kylie, revealed two aspects of wellbeing that the probes did not allow for expressing.

CULTURAL UNDERSTANDINGS OF WELLBEING

The first one is about culturally specific ways of expressing oneself:

“I can describe my growing up. When I grew up, everything was maybe a little bit patriarchal. [...] Now, what else I know is that we do not have a lot of culture in my country, but we have a culture of complaining. It's very hard to come to someone and tell them something nice, immediately. [...] So, if something nice happened to me, sometimes instead of saying, I found the job, I would say: Oh, my back hurts. I'm just getting this, probably not that. Oh, this is horrible, this is horrible, this is horrible. And then in some way, like on one line, I would add up, but I also got a job. And I'm really cool. We have a tendency to pile up on ourselves to disregard our success in this regard. Little bit like the good things, not be proud of them. And I don't like that. When for instance, I've learned to do that a little on my own to accept my success, that was wellbeing for me, in a way.”

For Kylie, it was important to describe her cultural context and her upbringings that influenced her relation to wellbeing and defined her path of self-consciousness and care. For the designer of the probes, it was important to understand how Kylie understands wellbeing and which values she considered while interacting with the probes. The open-endedness of the probes encouraged individuals to engage in their own sensemaking process – somewhere between art and design – and communicate with the designer. This assumes a shared context and communication channel among designers and participants. Kylie's attempt to share her cultural context problematizes the use of probes for designing across cultures. However, the cultural framing provided by Kylie also revealed to us that the collection of materials, the stories and the notes would be empty and dangerously open to external interpretations. Pluralism of experiences and bodies requires flexible spaces that escape the north-western universalist ways of designing and give the power to individuals to formally wrap design methods with their contexts.

WELLBEING IS OUT-OF-CONTROL

The second aspect of wellbeing stems from the interaction between the first author and Kylie after the end of the probes study. Informed consent was given to keep this event on record.

After the almost one-hour long interview with Kylie on the probes and her takeaways, the recording stops. At that moment, Kylie shared the difficulty that she is facing to engage with what she shared during her interview. Her difficulty summarizes in the following phrase.

“I need to find a job in order to be able to renew my visa. Then I can do everything.”

Yoga, mindfulness, rituals of care for her body but also interpersonal care were disregarded in the sight of stability and survival. Everyday struggles were found on the way of pursuing care practices and could not be ignored. Why did Kylie choose to express herself when

the official recording was off? Kylie's confession, outside of the framing of the probes and the interviews, highlighted that there were unspoken tensions that were perceived as outside the study frame – probably due to the prevalence of *well* prefix in wellbeing. Holding space for absences means considering the unexpected and curating the space in a way that individuals have the power to reject framings without being excluded. Kylie's contribution was rich in narratives of care, however, there was no space to illustrate her primary needs for stability as part of what we might consider wellbeing. As designers conducting work in the area of health and wellbeing, this raises important questions.

DISCUSSION: CARE AND EXCLUSION

Health and wellbeing, grounded on the intimacy and subjectivity of experiences, evolve around dynamically changing enmeshments between humans and non-humans. Ambiguity as design tactic may inspire interventions that respect the pluriversity of individual experiences of wellbeing and create spaces that allow individuals to gain agency over the ontologies of their bodies and identities through technology-mediated practices (Sanches et al., 2022). Attending to absences through tactics that leave spaces intentionally blank means to also consider the histories of the concepts and materials that we bring to our design process (Giraud, 2019). Care-full designs for wellbeing demand flexibility of spaces and reflexivity of methods in order to move forward and away from one-dimensional stances to wellbeing.

Every research project has a framing, even in cases where the designers purposefully intended to work with open-ended definitions. Staying with the trouble is an evocative provocation for designers and practitioners, yet the explorative design iterations described in this paper revealed to us aspects that hinder the attempts to responsible interventions. There is an inevitable framing, an inescapable closure in staying with *the* trouble that we ought to acknowledge – the trouble that someone actively selects over other troubles. This paper calls attention to the things that escape the frame and to the tensions that emerge when such situations occur in design. Feminist perspectives in design impel us to consider whether the given methodological tools are truly available to all people or whether they permit appropriation. The subjectivity inherent in the notion of wellbeing demands design strategies that acknowledge the asymmetrical power relations and embrace pluralism to mitigate the risk of intentionally excluding individuals and experiences.

Our design attempt and partial failure to cultivate entire spaces that fit alternative interpretations of wellbeing and care in everyday life evidences the challenging nature of designing with ambiguity. Ambiguous spaces demand



well-designed, participatory processes and transdisciplinary stances in research. The suggestion of holding the design space for wellbeing open for alternative narratives does not reject the scientific discourses of wellbeing nor intends to put individuals under the spotlight without their will. An ethics of exclusion invites designers to question invisibility through responsible and care-full practices that hold the space open.

Our exploration of the potentials and problems of leaving the space blank is meant to encourage design researchers to keep working on engaging with exclusions that we, implicitly or explicitly, bring to our design processes.

CONCLUSION

Design research informed by an ethics of care/exclusion (Giraud, 2019), is meant to help navigate knowledge politics within design work around designing for the body, especially with regards to how body centric technologies have world-making effects (specifically body-forming effects (Homewood et al., 2021), whereby human bodies are made known through them). In this paper, we have reflected on caring and holding space for alternative conceptions of wellbeing, and how an ethics of care and exclusion can be fruitful in illuminating further absences. What we have hoped to show is that designing with care, and with attention to exclusions, is never a done deal, but it should be under constant problematization.

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TIME AS AN ISSUE OF POWER IN PARTICIPATORY DESIGN

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ABSTRACT

Participatory design researchers address complex issues through collaboration with other actors.

These can be communities, third sector organisations, industry or governmental bodies, as well as other academic disciplines. Collaborators are seen as knowledgeable, and empowerment, mutual learning and democratic processes are emphasised.

However, such positive claims have long been undermined by skewed power relations, many of which are related to time. Time, an evasive phenomenon tending to escape visibility, is in this paper given centre-stage. The aim is to identify time challenges in participation, exploring their effects and social implications. The analysis of a project in Kenya reveals how time challenges; limit the diversity of participants; hinder participants from taking on roles that can evolve as projects progress; and impedes opportunities for co-production of knowledge. Together, these issues indicate a need for increased responsiveness from funders regarding the importance of emergent project structures and inclusive budgets.

INTRODUCTION

Participatory design often builds on action research methodology (Swann, 2002; Kensing & Greenbaum, 2013; Hasdell, 2016) and the idea that research should live up to high standard academic achievements, whilst at the same time reaching social transformation (Greenwood & Levin, 2007; Chevalier & Buckles, 2013). Research of this kind is formulated as being conducted *with* people and the inclusion of participant expertise is highly valued as it increases the robustness and social relevance of research (Guggenheim, 2006; Grant et al, 2008; Ehn, 2008; Polk, 2015b). It also contains the democratic notion that those who may be affected by the research need to be given the possibility to be involved in setting research priorities as well as influence its outcomes (Schuler & Namioka, 1993; Saad-Sulonen et al., 2018). In recent years, the need to also collaborate with other disciplines, in inter- and transdisciplinary constellations is highlighted and seen as necessary for being able to tackle complex contemporary issues (Guggenheim, 2006; Polk, 2015b; Lambe et al., 2020).

Apart from having the notions of collaboration and democracy in common, action research, participatory design and transdisciplinary research are all characterised by iterations in processes. This is seen as fruitful as it provides for an exploration of complexity and learning by doing. However, establishing collaboration and working through iterations is time consuming, and described as a “laborious” experience (Otienoh, 2015, p. 48), which is hard to sustain from beginning to end, not least for participants outside the academic realm (Polk, 2015a, b). Similarly, collaboration entails simultaneous coordination of activities on multiple levels, which demands a high level of commitment and time from all actors (Jantsch, 1970; Hoffman et al., 2017). Time scarcity is seen as a hindrance for reaching the goals of mutual learning and co-production of knowledge, as well as there is a tension between reaching a certain sensitivity, depth and



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degree of participation, and time efficient research (Polk, 2015a, b). In short, accumulated reports on time-related issues from scholars engaged in participatory research suggests that time must be recognized as a significant challenge, and it is stated that “we are still far from having an established time-sensitive discourse” (Saad-Sulonen et al., 2018, p. 5).

This paper acknowledges time, an often neglected void in research, as an issue of power in participation. It aims to identify time challenges in participation, exploring their effects and social implications, with the purpose of contributing to the foundation of a time-sensitive discourse. The authors connect to and build further on the time-lenses presented by Saad-Sulonen and colleagues (2018), as well as on the concept of *Ma* and in-betweenness by Akama (2015), for discussing strategies towards reaching time-responsive project set-ups that allows for participant diversity and expansion of participants role over time as projects progress. A theoretical framework based on three participatory research approaches (action research, participatory design and transdisciplinary research), contributes to a nuanced understanding of time related issues. Empirical material from a longitudinal participatory design project in western Kenya illustrates an unjust distribution of time between stakeholders and how these are dependent on various structural, socio-economic and cultural aspects.

THEORETICAL FRAMEWORK – CONCEPTUALISATIONS OF TIME IN LITERATURE ON PARTICIPATION

Time is embedded in all aspects of life, including research. However, in academic discourses, time is rarely a place from where the analysis starts (Grosz, 1999). A reason for its unarticulated presence is its intangible and fleeting qualities, which makes it hard to conceptualise in a concrete fashion. Even though everything that appears in life requires time (Derrida, 1992) and even though time shapes and affects all relations (Grosz, 1999), it is an evasive phenomenon that tends to withdraw itself from visibility (Derrida, 1992). Furthermore, time is dynamic and asymmetric in distribution, which gives both political and epistemic implications (Derrida, 1992; Grosz, 1999). Thus, time, even though it should be an important point of departure, not least due to its clear connections to power, is often absent in participatory research discourses.

DISTRIBUTION OF TIME - RESEARCHERS AND PARTICIPANTS

The inclusion of stakeholders in the initial stages of projects is considered essential for collaborative work. Action researchers emphasise the importance of

involving local stakeholders early on for setting priorities (McIntyre, 2008; Chevalier and Buckles, 2013), whilst participant inclusion when negotiating the project-frame is highlighted in participatory design (Winschiers-Theophilus et al., 2013). In transdisciplinary research, early inclusion in initial stages is considered crucial, since it is the space where a functional collaborative climate is to be set, where stakeholders are to establish a common ground for communication, as well as an understanding between different knowledge types, cultures, practices and worldviews (Hirsch Hadorn et al., 2008; Hoffman et al., 2017). However, this, and the task of jointly formulating the challenge at hand demand a substantial amount of time (Lang et al., 2012; Talwar et al., 2012; Wiek et al., 2012). In relation to this, Polk (2015b) argues that the time needed for initiating and managing transdisciplinary processes is often underestimated. Similarly, Talwar and colleagues (2012) see lack of time to establish a functioning team as a main obstacle for reaching co-production of knowledge. Furthermore, although time for collaborative framing is emphasised, examples given by scholars indicate that projects are commonly framed by researchers (Talwar et al., 2012; Polk, 2015b). Non-academic stakeholders are often excluded from the initial stages, making it difficult to accomplish a purposeful degree of involvement in the following phases (Talwar et al., 2012). This lack of stakeholder involvement follows from the need to secure funding and the prevailing application structures from funding agencies, with which scholars are more familiar compared to actors outside academia (Talwar et al., 2012). In addition, researchers need to apply for funding since it is the way of securing their future employment (Siebenhüner, 2004). Likewise, in participatory design it is mentioned to be too easy for researchers to exercise power, framing projects according to their own agendas, whilst leaving little room for participants’ views (Steen 2011; Bratteteig et al., 2013).

Turning to the actual project process, scholars emphasise the importance of shared responsibility and power amongst stakeholders to enable co-production and mutual learning (Lang et al., 2012; Bratteteig et al. 2013; Polk, 2015a; Saad-Sulonen et al., 2018). However, there seems to be a major difference between this methodological emphasis and what is realised in practice. Regarding transdisciplinary projects, it is stated that it is especially the practitioners and often overworked public officials that find it challenging to devote time, as opposed to researchers who generally have more freedom in how they can use time. Some stakeholder groups may also find it hard to stay devoted to projects that stretch over longer time periods, and they may have other timelines than researchers (Lang et al., 2012; Polk, 2015a). In action research, Otienoh (2015) acknowledges the difficulty for teachers to set



off time for school-based action research due to their already pressed schedule. Participatory design scholars have further noted that these challenges are related to costs or loss of income. Researchers most often get remuneration for their time in projects, whilst other stakeholders' ability to participate in a fair way is dependent on various social and economic aspects. It may even be the case that people's participation comes with a cost, since they may need to take time off paid work or compensate someone else for taking care of their work shores (Kraff, 2018b; Kraff, 2020).

DIVERSE CONCEPTIONS OF TIME

Conceptualisations of participants often stay on a general level in literature on participatory research. Action research typically refers to researchers and practitioners (Greenwood & Levin, 2007), while transdisciplinary research identifies academia, government, industry, civil society, and society (Lang et al., 2012). Participatory design initially mainly involved staff in Scandinavian workplaces (Kensing & Greenbaum 2013), but now also engages residents and disadvantaged or marginalised groups across the world (Light & Akama 2012; Blomberg & Karasti 2013; Lambe et al., 2022). As a result of this broadened engagement, the term community is commonly used (DiSalvo et al., 2013), which has received criticism as it contributes to a vagueness regarding who participates; it is "simultaneously elusive and familiar" (DiSalvo et al., 2013, p. 183). Hidden behind broad conceptions is also the common phenomena that those who participate often belong to already strong groups (Kothari, 2001; Kothari et al., 2019). In recent years, however, there is more nuance in descriptions of community participation. Participant diversity is recognized through mentions of community leaders, elders', youth and women's groups, as well as through discussions on their multiple individual realities (Winschiers et al., 2013; Poderi et al., 2018; Lambe et al., 2022), which gives people differing preconditions for participating (Kraff 2018b).

In line with this acknowledgement of participant diversity, it is important to also understand what this means in relation to time. For example, individuals and groups in a community, may have diverse timelines and expectations on project time, whilst local and external actors in cross-cultural projects may have different understandings of time. Kenyan philosopher Mbiti (1969) conceptualises interpretations of time in Africa as phenomenon and event based, ruled by important happenings, as opposed to a chronological and numerical clock time, which normally controls the idea of time in for example Europe and North America. Linguistics also affects how we view time. In English speaking contexts, time is seen as having a certain length, as in short or long meetings, whilst other languages (e.g., Spanish) depicts time as an amount, as

in plenty or little time (Pallas, 2018). Such differences highlight the importance to recognize that peoples varying relations to time affect their interpretation of the participatory approach and the use of methods and tools. It illustrates the need to not see time only from one perspective, and to not to impose one's own conception as more right than any other, but to take different timelines into consideration and explore where they may clash (Huybrechts et al., 2018; Poderi et al., 2018).

'IN-BETWEEN TIME'

Methods and tools of participation are interesting to explore in relation to time. Literature on transdisciplinary research rarely goes into depth with methods and tools. This is on the contrary common in other participatory approaches. In development studies, discussions are kept on challenges with the collaborative workshop format. Pottier and Orone (1995) state that as workshops are often built around open discussions it is hard to discuss sensitive, complex and contested issues, especially in the early stages of projects. Dealing with conflicts demands establishment of trust, which takes time (Ibid, 1995). In short term projects, there is little opportunity to build trust, which can result in narrow results built on shallow compromise (Shah & Kaul Shah, 1995).

Participatory design has historically placed emphasis on methods and tools (Bratteteig et al., 2013). In recent years however, explorations are called for regarding what takes place in-between design events, since problematic issues, concerns and tensions do not always emerge during organised activities such as workshops, but also during informal encounters (Halskov & Hansen, 2014; Saad-Sulonen et al., 2018). Similarly, Akama (2015, p. 266) introduces the Japanese philosophy of *Ma* for acknowledging the importance of paying attention to "between-ness" in participation. Between-ness can be pauses and unspoken but felt tensions in conversations or other intangible undercurrents that affect relations between participants. Thus, the availability or lack of between-ness influences outcomes and requires the ability to slow down and notice the impact of "small moments" in collaboration.

FEMINIST METHODOLOGY AND THE 'SOCIAL ORGANISATION OF TIME'

A long standing focus in participatory action research is the challenge of reaching a sound gender inclusion in community based projects (Gujit & Kaul Shah, 1998; Cornwall, 2003; Omondi et al., 2019). Gender needs to always be kept as an area of analysis, and appropriate methodologies and support for sound gender inclusion needs to be continuously developed (Cornwall, 2003; Omondi et al., 2019). Scholars also propose that those engaged in participation should take lessons from

feminist methodology on how to detect and deal with gender challenges (Gujit & Kaul Shah, 1998).

Accordingly, turning our gaze towards feminist studies, we find discussions on the “economy of time” (Glucksmann, 1998, p. 239), “gendered patterns of time” (Neilson & Stanfors, 2014, p. 1066) and the statement that time exchanges have the potential to reinforce old or produce new hierarchies and inequalities (Glucksmann, 1998). Feminist scholars argue that we need to see to the “total social organisation of time”, which includes paid work time, unpaid household work (including childcare time), community engagement and the gender asymmetries that lie within it (Glucksmann, 1998, p. 243; Negrey, 1993; Neilson & Stanfors, 2014; Collins et al., 2020). Such asymmetries manifest themselves in women’s multiple responsibilities, referred to as dual burden (Odih, 1991), double burden (Chen et al., 2007) or double days (Sirianni & Negrey, 2000), in instances when they are the main responsible for the home and family whilst also working (Owano, 2014).

Furthermore, the recognition in gender studies of temporal time limits (Negrey, 1993) indicates a need to reflect upon whether there are stakeholders who find it difficult to participate within certain timeframes. Similarly, the notion of ‘multiple work temporalities’ (Glucksmann, 1998, p. 255) is important to take into consideration in contexts where people often rely on multiple jobs for their livelihoods (Chambers & Conway, 1992), since it affects their possibilities to participate in projects. Another component is community participation, where one devotes her or himself to community related activities, which takes commitment and time. In short, it is important to see to the ‘total social organisation of time’ and reflect on how the relation between paid work time and household work time can facilitate as well as hinder peoples’ community participation (Negrey, 1993).

CALLING FOR CHANGE

The time related challenges described in this theoretical section calls for critical reflection on how projects are organised between stakeholders, and for support structures that allow for just participation and collaborative ways of setting up frameworks. Scholars engaged in transdisciplinary research argue for institutional as well as methodological support, that is flexible enough to deal with the complexity, multiple interactions and mediations that such projects entail (Pohl et al., 2010). Changes are required in academic systems and university research agendas (Lang et al., 2012; Wiek et al., 2012), and there is a need for new types of funding schemes that can provide with the institutional support that “this type of highly time consuming, often intangible work” involves (Polk, 2015b, p. 181). It is proposed that funding of projects

should be extended in time to include implementation periods (Siebenhüner, 2004), as well as to monitor and evaluate outcomes (Wiek et al., 2012). Pohl and colleagues (2008) suggest specific funding procedures for the time consuming first phases to identify problems and design the approach.

Turning to participatory design, scholars argue for nuanced examination and the establishment of a rigorous discourse regarding participation and time. Time should be a concern in processes that engages a diversity of actors (Poderi et al., 2018), and there is a need for taking a temporal approach to participation in which focus is placed on how participation unfolds over time (Bratteteig & Wagner, 2016; Vines et al., 2015; Kraff, 2018; Saad-sulonen et al., 2018). This includes paying attention to *use before use* and *design after design* (Redström, 2008). Also, Saad-Sulonen and colleagues (2018) propose, as a complement to the current focus on project- and future-oriented temporalities, that scholars make use of five lenses for expanding their temporal sensitivity:

- phasic lens: paying attention to phases, cycles and iterations
- emergent lens: reflection and problematisation during projects of how participation unfolds over time
- retrospective lens: evaluating how participation unfolded in retrospect
- prospective lens: imagining how participation may unfold in projects, or how implementations are cared for after projects
- long-term: taking the full perspective – before, during and after projects

Similar suggestions include Huybrechts and colleagues (2018) use of collective scripting, a form of future scenario writing that aims to set the stage for community-led actions in post-project time. Poderi and colleagues (2018) make use of retrospective mapping to critically examine all project phases and activities. This, they argue, makes it possible to visualise the multiple realities, aims and needs of participants. Furthermore Kraff (2018) makes use of a model for reflecting on participant diversity and their changeability over time in projects and discusses how the actions of researchers can affect the situation of and relations between participating groups.

There are, as the above discussion shows, examples in literature on how researchers can reflect on and pay attention to time. However, as Akama (2015) points out, writing out empirical stories connected to time, particularly if they deal with between-ness, is not awarded due to their ambiguous nature. Thus, reflective accounts regarding time still tend to be left out of research reports.



TIME CHALLENGES ILLUSTRATED - PARTICIPATORY RESEARCH IN KENYA

Placing a temporal lens on a participatory design project in Kenya serves to illustrate how time challenges can take shape. The authors use a retrospective lens (Saad-Sulonen et al., 2018), and a focus on power-relations between stakeholders, which reveal time challenges that are yet to be fully acknowledged in the academic discourse. Running between 2012 and 2016, the project was funded by the research centre Mistra Urban Futures and its local platform in Kisumu, Kenya. The context was a fishing community on the shores of Lake Victoria about five kilometres from Kisumu city, and the set-up was a transdisciplinary North-South collaboration. It involved PhD students from Sweden and Kenya coming from design, marketing, urban planning and ecology, as well local organisations and residents in the community. The application area was small-scale ecotourism development, identified by local scholars and the county government as a driving force for sustainable development and the creation of local jobs.

Community residents were invited to participate in three workshops in the initial stages, with the aim of bringing forth ideas and concerns for ecotourism development. With the purpose of keeping the project accessible for residents throughout, an available project space was set-up, four public presentations were held, and six (non-academic) project reports made available. A central aim was also to integrate a gender perspective and to include women in otherwise male dominated tourism professions. The authors' closest collaboration was with a local guide organisation, whose members live in the community. Members of this group were actively engaged throughout, in collaborative workshops and in general planning. Small-scale implementations were made continuously, and the practical results included the development of guided tours, an improved marketing strategy for the guide group, and infrastructural improvements through waste collection points and a signage system. Other outcomes include the initiation of a countywide association that aims to support local guide groups around Kisumu County and a CBO for women wanting to work in tourism.

The main empirical material is the authors' research journals based on direct observations and reflections during field work as well as reflections after each activity regarding what was said and done through formal and informal discussions with each other, research colleagues, members of the guide group and other stakeholders. In addition, twenty-one open-ended interviews (recorded and transcribed verbatim) were conducted with local stakeholders, of which one (with a guide) focused specifically on time in relation to the project.

DIVERSE TIME PRECONDITIONS AMONGST LOCAL STAKEHOLDER GROUPS

The stakeholders from the community who dedicated most time to the project were the members of the guide group. Many of them are also devoted to general community development and are often involved in several groups and projects simultaneously. One of them mentioned that there are projects that you are passionate about, which you can 'dedicate most of your time' to, even if you are not paid for it. These can be projects that are within his area of work, for example the ecotourism project that this paper concerns, which he feels he can spend time on since it is directly connected to his work as a guide. It is beneficial in terms of gaining new knowledge on ecotourism development but also since it has tangible effects for the local tourism business. Furthermore, his membership in the group, where they share revenues collectively, gives him the opportunity to earn an income even in the days when he partakes in projects.

This is however not the situation for everybody. Many individuals and groups in the community find it difficult to devote time in projects, since it means losing out on income. Members of the guide group comment that residents generally experience it as difficult to participate in workshops that stretch for several hours. This issue can be a contributing factor as to why project participants often represent already strong groups (Kothari, 2001). Another example is that other guide groups in Kisumu County (who became part of the countywide association for guides) find it hard to participate in projects as they are not formalised enough so that they can provide members with compensation during project attendance. As a guide from another site in the county expressed it, although training or new knowledge is provided that is important for the future, he finds it difficult to attend workshops, since it is time that could have been used to make a living.

In an initial workshop with a group of female fishmongers an aim was to gather their perspectives regarding the local ecotourism business, and the fact that it attracts, not only visitors, but also a large number of researchers and students. Images of visitors and researchers coming to the community were used to aid conversation and the women were asked to place red or green stickers to illustrate whether they considered such situations as negative or positive. The women all expressed positive thoughts on tourism and that they enjoyed interacting with visitors in the fish market. However, as one woman placed a red sticker on an image representing a researcher interviewing a resident this created tension between her and the other women. The group did not want to discuss the matter in more detail then and there and simply stated that researchers coming to the community was positive. This can be seen as a moment of in-betweenness filled with unspoken

frictions (Akama, 2015), that is easy to rush past for the sake of moving on with the process. However, as the authors' Kenyan PhD colleague, who was present in the workshop, was deeply immersed in the women's situation due to her own research on fish markets, this moment was revisited. In this case general knowledge on gender related issues should indicate that women may experience it as more difficult to participate (Gujit & Kaul Shah, 1998), however the specificity of each situation needs to always be examined. Further discussions with the authors PhD student colleague, the guide and fishmonger group slowly revealed how the specific work schedule and level of organisation of the fishmongers affected their ability to spend time in projects. They have a full working schedule from morning till evening, and attending a workshop would directly lead to a decreased income that day. They only have a specific and small window of time, when the fish is drying (maximum two hours in the morning), that they feel comfortable leaving their workstation. However, they would need to put someone else in charge, which gives extra expenditures. Thus, insight in their profession made their specific temporal limitation (Negrey, 1993) visible, which in turn made it possible to establish a format through which they found it feasible to participate.

Yet, another time difficulty was the uneasiness that the guides felt about the digital meetings that happened in-between the authors field-periods in Kisumu. During this time, the authors and the guides communicated via email, which the guides found easily accessible. However, it was not until late in the process that one of the guides, who was responsible for communication, explicitly stated that digital meetings were experienced as stressful. The guide group shared one computer between them, which meant that he needed to negotiate with the other guides before being able to confirm a meeting time. As the microphone and camera only worked sporadically, and as there were occasional power cuts in the community, it meant that he often needed to travel to an internet café in town, just to realise that the time for the meeting had already passed. The guide group and the authors established a relationship early on that allowed for time related issues to be openly discussed in person. However, the fact that the stress connected to digital meetings did not surface until later, indicates that tensions and moments of uneasiness (Akama, 2015) are particularly difficult to detect, and thus also deal with when communication goes digital.

Participatory activities that are public and open for community members and groups to attend may seem accessible for everybody at a first glance. However, considering the above examples in relation to the "economy of time" and "total social orientation of time" (Glucksmann, 1998, p. 239, 234), it illustrates a need to create an understanding of the diverse groups and

individuals in communities, their varying positionalities and "differential allocations of resources" (Bozalek, 2011, p. 469). In the Kisumu project, the guide group in the community, other guide groups in the county and the fishmonger group all had very different preconditions to participate, as they had varying levels of control over the disposal of their work time and free time. This illustrates how time can limit the diversity of participants, and hinder some groups and individuals from participating, whilst premiering other often already strong groups. Thus, asymmetries in relation to gender, group belonging and level of group formalisation needs to be taken into consideration. Also, a group may hold positions of both privilege and disadvantage at the same time, depending on what you put their situation in relation to (Bozalek, 2011). For example, the guide group in the community had a privileged position compared to other residents, although they had a disadvantaged position in relation to the researchers engaged in the project.

DEVELOPMENT AND EXPANSION OF PARTICIPANTS' ROLES OVER TIME

Participation demands time from everyone involved (Polk, 2015a). It is a challenge to find a good balance between a high level of involvement to reach shared responsibility (Lang et al., 2012), and the risk of overwhelming people with too much participation. When writing about the project in earlier publications, the authors reflected on their own roles as researchers as well as the role of the guides (Kraff & Jernsand, 2014a,b), which indicated a need to involve the guides in discussion on these writings. However, a risk when aiming to involve local stakeholders also in reflection is that they end up in a situation previously acknowledged as problematic for researchers, namely where the duality of being heavily engaged in managing the practicalities of projects, whilst at the same time needing to engage in time consuming reflection, come in conflict with each other (Lang et al., 2012). This also connects to the aim in transdisciplinary research of reducing the gap between practice and research, and reaching co-production of knowledge (Talwar et al., 2012; Polk, 2015b). Thus, it is interesting to question how far from the traditional roles of researchers and practitioners we can and should go, and how flexible project frameworks and funding systems are when people's roles develop over time as a project progresses.

In the Kisumu project, one of the guides became increasingly devoted as the project progressed, taking on more responsibilities and engaging in reflective discussions. He expressed that he had felt set aside from the writings of the first four reports, which had been written by the authors without the guides' involvement. This led to the last two reports being written in collaboration with him, and the authors invited him to a research seminar in which he presented the project to an



international audience of researchers in sustainable tourism. This is an example of how transdisciplinary research, to some extent, can transcend the boundaries between academia and practice. However, the deepened participation and extended responsibility did not lead to changes in the overall project set-up and there was no budgetary room made for the additional time that the guide spent in the project. The project thereby remained within the rigid forms of traditional research funding and budgeting. This example shows a need for researchers to engage in collective and critical discussions regarding roles and the allocation of project resources. It also illustrates a need for flexibility in project budgets to allow for equitable participation for people whose involvement and responsibilities increases over time, as well as a flexibility regarding what stakeholders are accepted to be included in project budgets.

Also, it cannot be taken for granted that people have the possibility to stay devoted over longer periods of time (Lang et al., 2012; Talwar et al., 2012). Local stakeholders may be involved in several projects at the same time. and as one of the guides expressed it, ‘sometimes you find that people criss-cross between projects. If they are taking place at the same time, it means that people do not have enough time to learn and share from each and every project’. This ecotourism project was the longest so far, which he considered positive. However, people have different timelines (Talwar et al., 2012; Huybrechts et al., 2018; Poderi et al., 2018), and some of the guides did not find it possible to participate in all phases. One of the guides who provided an important critical perspective was often engaged in other projects, which made it hard for him to be available for meetings and workshops. People’s ability to participate and be committed can also be related to the notion of livelihoods (Chambers & Conway, 1992). Many community members juggle several jobs, which argues for consideration of people’s “multiple work temporalities” (Glucksmann, 1998, p. 255), when designing the approach for participation.

CONCLUDING DISCUSSION

Although research has identified issues of power in participatory projects for decades (Gujit & Kaul Shah, 1998; Chambers, 1994; Steen, 2011; Bratteteig et al., 2013), their constant recurrence indicates continued need to raise concerns. Using a retrospective time-lens (Saad-Sulonen et al., 2018), this paper makes visible the relationship between power and the elusive phenomenon of time, and illustrates how time challenges: emerge and persist between stakeholders; limit the diversity of participants; prevent participants from taking on roles that evolve as projects progress; and impede co-production of knowledge. These issues demand continuous critical reflection in projects, and it

requires a temporal lens when setting up and managing projects. Furthermore, it signals a need for wide-ranging debates between funders, universities, researchers and other stakeholders who have practical fieldwork experience, with the aim of reaching necessary changes in structures and funding systems.

The traditional roles of researchers and participants are since long set in motion through various forms of participatory research, however funding systems are yet to fully follow. The time that different stakeholders put into projects is not sufficiently highlighted and certain groups and individuals risk ending up in the space between engaged citizens and paid project partners. There is a need for flexibility from funders, for example in terms of what roles these stakeholders can take, and what remunerations they should be given. As funders increasingly request broadened participation, they need to also open up for the inclusion of more actors than scholars and university administrators in project budgets. Such projects need to allow for openness and emergence, as people’s level of involvement may change as projects are progressing, for example by making it possible to keep budget-posts earmarked for alterations in project participation. Furthermore, building on the idea of the prospective lens (Saad-Sulonen et al, 2018), keeping budget-posts earmarked can be complemented with reflective workshops conducted in the initial project stages, where two or three scenarios are formed as a means for being able to speculate on how participants’ roles may evolve over time.

Another concern is the in-between moments of unspoken, but felt tension in participation, that are easy to rush past, despite their importance for project progress (Akama, 2015). The discussion in this article exemplifies, develops and merges the idea of an emergent time lens (Saad-Sulonen et al., 2018) with the notion of *Ma* and in-betweenness (Akama, 2015), as a means to open up for reflective discussions during projects on how participation unfolds. Scholars need to aim at being responsive to such in-between moments as part of securing participation that is accessible for a diversity of participants, as groups may have different and highly specific time preconditions. Although, important to keep in mind is that in-between moments can be particularly difficult to detect in initial project stages, before relationships are established, or during digital encounters.

Furthermore, peoples access to time for participating can vary greatly, and it may be dependent on the level of formalisation of the groups to which they are affiliated. For example, it matters if their affiliation can ensure income during the time spent in projects or if participating means paying someone else for taking care of your work tasks. This provides further evidence to the acknowledged need for time in initial stages (Lang

et al., 2012; Wiek et al., 2012; Polk 2015b) as a means for establishing understanding of the diverse and sometimes highly specific time preconditions that participants may have.

Lastly, time related issues have been addressed in slightly different ways in discourses on participatory design, transdisciplinary research and action research, which indicate that learning can take place between these. Scholars engaged in transdisciplinary research, for instance, have placed emphasis on the difficulty of organising sound project set-ups within existing funding schemes and systems (Siebenhüner, 2004; Talwar et al., 2012; Polk, 2015b). In participatory design focus is placed on how time-lenses can be used for reflecting on people's participation, before, during and after projects (Redström, 2008; Huybrechts et al., 2018; Saad-Sulonen et al., 2018). In other words, the often overarching and generalised transdisciplinary discussion could benefit from the hands-on empirical examples given in design. At the same time, design scholars can find a starting point in the transdisciplinary discourse, to argue for altered and more flexible funding schemes.

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DESTABILIZING THE QUOTIDIAN: URBAN RECIPES FOR CULTIVATING CARE IN THE MORE-THAN-HUMAN CITY

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ABSTRACT

This paper explores how everyday practices can be an inspiration for novel designerly ways of relating to others and cultivating care in response to the prevalent lack of care in our precarious world. We present *Urban Recipes*, an ongoing project that combines the spatial exploration of drifting with the recursive practice of recipe-making, opening up a space for new ways of relating to the more-than-human urban environments that are home to both humans and nonhumans. Applying the metaphors of cooking to this paper, we trace the evolution of the project, starting from the *recipe* and developing it into the *cookbook* and the *test kitchen*. Finally, as we gather our reflections at the *table*, we meditate on how the transformation of the personal, the destabilization of the quotidian, and the creation of the joyful through *Urban Recipes* facilitate a new way of noticing and caring.

PRELUDE

When catastrophes ranging from pandemics to natural disasters saturate our newsfeeds, for many of us the initial shock quickly morphs into a perpetual sense of anxiety and precariousness. As Anna Tsing has observed, “precarity is the condition of our time” (2015,

p.20). In such a condition, we go about our everyday lives, becoming increasingly blind to our interdependencies with others and losing our ability to care (The Care Collective, 2020). Yet caring for one another has become ever more necessary and urgent in this fragile world: design, as “an art of responding” (Ávila 2022, p.52), has the potential to cultivate such care.

This paper tells the story of how two designers cultivate care as a “necessary practice” and an “affective force” (Puig de la Bellacasa 2017, p.160, p.162), through adopting seemingly mundane everyday practices. For this purpose, we present the ongoing project *Urban Recipes*, which combines the spatial exploration of drifting with the recursive practice of recipe-making. Originally an auto-ethnographic exploration, *Urban Recipes* has developed into a design experiment that expands from the personal to the collective and connects them to the ecological. In so doing, it opens up a space for new ways of relating to and caring for one another in the more-than-human city. Tracing the project’s evolution, this paper reflects on how design can foster a care that is inclusive, regenerative, and joyful.

This paper is structured around the same metaphors of cooking that we use in the *Urban Recipes* project itself. These metaphors produce not only linguistic play but also an embodied practice that brings new ideas into existence (Murray-Rust et al., 2022). Therefore, we invite you to drift through the *recipe* from which the project originated, the *cookbook* that served to expand the exploration, and the *test kitchen* where diverse experiences were enacted, and finally arrive at the *table* for reflections. This paper contributes to a growing body of design work that sheds light on our entanglements with the more-than-human by exploring practices of noticing and relating (Liu et al., 2018; Biggs et al., 2021; Edwards et al., 2022). Moreover, we propose three tactics for designers working with care: the



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transformation of the personal into the collective, the destabilization of everyday practices, and the creation of joyful engagement.

A RECIPE

For many city-dwellers, traversing and experiencing the contemporary urban landscape involves the act of walking. “The city is a discourse”, as Roland Barthes (1970-1971, p.92) has intriguingly suggested, and wandering through its multiplicity of spaces serves as a form of both writing and reading the urban text. Strangers to the cities we now reside in – Rotterdam, the Netherlands, and Umeå, Sweden, respectively – we walked to explore the unfamiliar. These explorations were undirected and open-ended. Instead of relying on the panoptic view offered by a map or following a totalizing line suggested by a navigation app, we let intuition and curiosity lead us and willingly got lost in the “shadows and ambiguities” (de Certeau 1988, p.101) that our wandering created. *Urban Recipes* was born when the experience of walking in one city was translated into a set of instructions that were shared and later carried out in another urban space hundreds of miles away.

Walking as a form of art-making has been practiced by generations of wanderers. Reviving Charles Baudelaire’s melancholy figure of the flâneur, Walter Benjamin describes the Parisian meandering in the 1920s as “a demonstration against the division of labor” (Benjamin 1982, p.427). While the Dadaists explored the quotidian space in Paris, the Surrealists walked the Parisian countryside to conduct a psychological investigation (Careri, 2017). Guided by the critique of the capitalist city, the Situationists drifted aimlessly in the post-war urban landscape, sensing the rapidly changing ambience in an attempt to capture the city’s latent unconsciousness (Sadler, 1998). Meanwhile, across the Atlantic, Fluxus artists effected playful excursions in New York City through walking scores inspired by musical practice (O’Rourke 2013, p.12).

In the making of *Urban Recipes*, we drew inspiration particularly from the urban drifting (dérive) practiced by the Situationists. In his “Theory of the Dérive”, Guy Debord regards cities as rich in “psychogeographical contours, with constant currents, fixed points and vortexes” (Debord 1958, p.62). Dérive, with its constructed randomness and playfulness, is able at once to effect emotional disorientation and to invoke psychogeographical observation that penetrates the mundane façade of the city (Debord, 1958). Following the tradition of the dérive, our own driftings, enacted separately in our respective cities, led us to form renewed impressions of familiar routes, discover less-visited corners, and pay attention to humble happenings. No longer a space experienced through the functionalist

pursuit of efficiency, the city reveals its rich ecologies to the observant drifters.

Could such an experience, embodied and idiosyncratic, be shared and even recreated in another context? What could the dislocated recreation bring about? Sharing an interest in the everyday practice of cooking and a personal connection with family recipes, we were fascinated by how recipe-making could turn subjective experience into shareable knowledge. The recursivity of the practice provided space for interpersonal exchange and improvisation. This reflection prompted us to note down recipes based on our spatial explorations – drawing on the event scores created by Fluxus artists, these urban recipes used poetic instructions to encourage associations and actions. The recipes, created in two different cities, were then exchanged between us. The received urban recipe served not only as a navigation guide but also as a form of disorientation that often infused the act of drifting with a sense of proximity and wonder.

Following each other’s urban recipes, we documented our observations in drawings, notes, photos, audio recordings, and videos. Often these recipes directed the wandering eyes to the voiceless – a fallen chestnut, a moving shadow, a chirping bird – prompting rumination on our ecological entanglements in more-than-human cities (Figures 1-3).

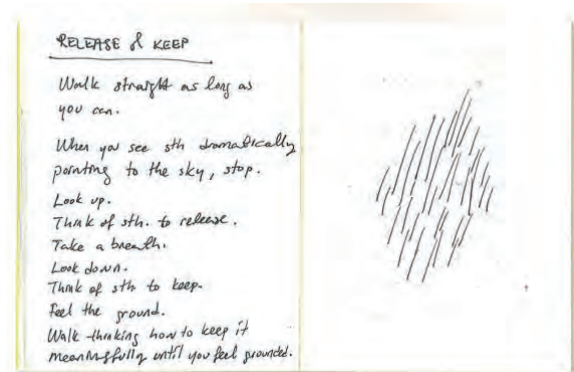


Figure 1: An urban recipe titled “release & keep” created by Seda Özçetin.



Figure 2: An urban recipe titled “bloom and decay”, created by Yuxi Liu and exchanged as a postcard.



Figure 3: Sketch and photographic documentation by Seda Özçetin for realizing one of the recipes.

A COOKBOOK

After a period of making and exchanging urban recipes, we created a cookbook with the intention of engaging an audience beyond ourselves. By way of introduction, the cookbook opens with a few lines formulated in a poetic way that reflect the style of the urban recipes previously created. Two urban recipe examples aim to inspire the cookbook’s readers (Figure 4). An illustrated section of “ingredients” (Figure 5) lists possible urban encounters, including humans and more-than-human things and happenings (a passer-by, a raindrop, a moving shadow, etc.). Following the “ingredients” section, a section titled “techniques” lays out actions one can take to sense, observe, and relate to one’s encounters (touch, hold, whisper, etc.). Next, the “utensils” section names tools that can be helpful for documenting the drifting (camera, pen, paper, etc.). Finally, the reader can find a “recipe-making” section that offers space for them to create their own urban recipe and reflect on their experience.

Akin to the urban drifting that the cookbook hopes to inspire, its texts follow roving lines. These lines,

comparable with “lines of thought as well as lines of motion” (Ahmed 2006, p.16), create a sense of space and movement that directs the wandering eyes of the reader. In suggesting rather than prescribing elements of an urban recipe, the cookbook constitutes what Umberto Eco calls an “open work”, inviting its readers to activate their own “emotional and imaginative resources” (Eco 1989, p.9). A two-dimensional space to be inhabited, the cookbook stimulates both an imagined and an embodied spatial exploration.



Figure 4: An urban recipe example with documentation in the cookbook.



Figure 5: The “ingredients”, “techniques”, and “utensils” sections of the cookbook, printed on tracing paper and accompanied by watercolor illustrations.

A TEST KITCHEN

To bring our exploration further and engage a wider audience, we hosted the workshop *Urban Recipes: Test Kitchen N°1* in Eindhoven during the 2022 Dutch Design Week (Figure 6). Part of the Design United program entitled “More than Human Design”, the workshop counted 16 participants from various backgrounds in design and beyond.



Figure 6: Workshop materials for *Test Kitchen N°1*: the cookbook and posters.

The workshop started with a brief introduction to the project as a whole and the workshop's specific aim and structure, after which participants were each handed an *Urban Recipes* cookbook (Figure 7). While participants flipped through the cookbook, we read out one of the recipe examples and prompted participants to recall their recent walking experiences, including the journeys they took to arrive at the workshop space. We asked participants to create their own recipes in the cookbook, drawing on the sample recipes provided, including potential ingredients and techniques, as well as their individual experiences and interests. Following the recipe-making session, participants gathered around the table and passed their recipes to the person next to them as a way of exchanging. Participants then ventured outside and began their individual drifting, following the urban recipe they had received (Figures 8-10). After 30 minutes, participants met back at the workshop space and shared their documentations, experiences, and reflections (Figures 11-12).



Figure 7: Introduction of the *Test Kitchen N°1* workshop. Photo: Twycer.



Figure 8: A workshop participant realizing a received recipe. Photo: Twycer.



Figure 9: A workshop participant annotating a received recipe as a way of documentation. Photo: Twycer.



Figure 10: A workshop participant documenting their experience. Photo: Twycer.



Figure 11: A workshop participant's documentation, including written observations, polaroid pictures, and a fallen leaf.



Figure 12: Workshop participants exchanging their experiences. Photo: Twycer.

The urban recipes created by the participants and their subsequent drifting documentations revealed a plurality of experiences and perspectives. Taking a cue from the wandering lines spread through the cookbook, many participants constructed their recipes in a visually engaging way, with some incorporating symbols and sketches (Figure 13). The newly created urban recipes displayed a keen attention to the more-than-human and a manifest sense of ecological care. The recipes encouraged their readers to linger in the outdoor space, noticing and interacting with everyday things usually taken for granted, often in an unexpected manner. For example, one recipe prompted its recipient to employ senses beyond vision by asking them to “touch the tree trunk and feel the natural energy from the tree flowing into your palm”. Another recipe foregrounded a sense of connectedness by asking its recipient to “walk to the tree that has lost most of its leaves and say to it ‘it’s all right, there will be a new spring soon’”; this instruction also brought about personal contemplation, with its recipient reflecting in their documentation that “speaking to the tree was so powerful, I think it also helped me understand that there will be a new season”. One recipe directed its reader to observe a flying insect

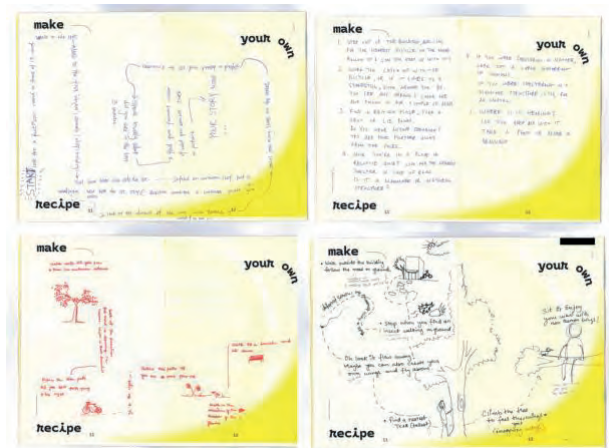


Figure 13: Four urban recipes created by workshop participants.

and, from there, to imagine wings of their own: “maybe you can also create your own wings and fly above”.

Similar to the diversity of the recipes themselves, participants also documented their driftings in different ways (Figure 14). Most participants recorded their experiences in written notes, and many also captured their encounters in digital photos as well as through diagrams and sketches, some in a humorous way. A range of found objects were also presented, including fallen leaves, a blade of grass, and a discarded shopping receipt. In recording their own experience, one participant annotated the original recipe they had received directly, forming a striking dialogue. Just as the operation of cooking often requires improvisation based on the resources at hand, the documentations also showed ad-hoc acts. In response to one recipe's instruction to smell a fallen leaf, for instance, the recipe's recipient noted that they were unable to find a leaf and therefore “smelled the bikes”. While most recipes focused on connecting its readers with nonhumans in the surroundings, a tangible and intimate interaction with the nonhuman others also directed one to look back at oneself, as one participant noted, writing “the roughness of the bark brought my attention to my dehydration”. Participants recorded their dialogues, both with themselves and with nonhuman others. For example, one participant contemplated, “what makes a shadow pretty? Can only pretty objects cast pretty shadows?”, while another observed, “an insect jumped on my arm with a metallic green tail, and I was just saying don't move, let me take your picture”.

In the concluding session of the workshop, participants reflected on their experiences of making, exchanging, and recreating urban recipes. Some commented on the open-endedness that the process had afforded. Such an open-endedness provided space for improvisation and play. The playfulness many participants had found in their experiences helped shed a new light on how they might relate to others in different ways, both human and

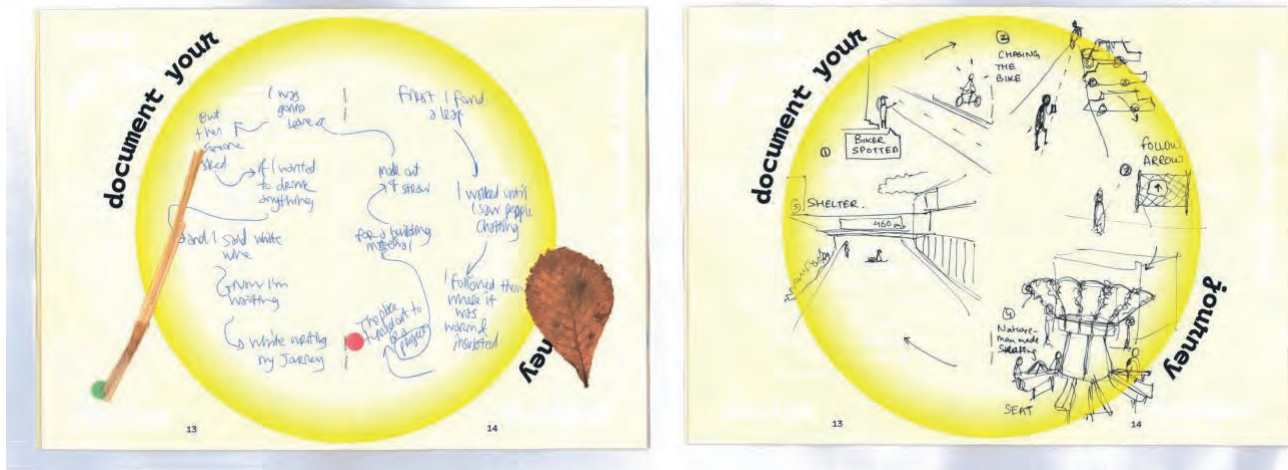


Figure 14: Two documentation pages created by workshop participants.

more-than-human. The exchange of recipes offered participants unique insights into a perspective other than their own, and the embodied experience of drifting helped generate a kind of knowledge that was both situated and tacit. Activating the city as a site for participation and play, the test kitchen thus served as a way of “collaborative place-making” (Wark 2011, p.140).

A TABLE

We have so far traced how *Urban Recipes* came about and evolved through its different enactments. While the project is still ongoing, we present insights that have emerged to date. We hope these insights offer useful tactics for designers who engage with care practices.

TRANSFORMING THE PERSONAL

Exploratory and introspective, *Urban Recipes* started off as an auto-ethnographic inquiry. We turned to our own personal contexts, trying to understand our place in the world through the cities we live in and the walks we take (Schouwenberg & Kaethler, 2021). This initial exploration yielded insights into ourselves as well as our relations with everyday urban spaces, which then led to the creation of a first series of urban recipes.

Exchanging these recipes with each other gave us glimpses of our thought processes and vulnerabilities; subsequently, the act of realizing each other’s recipes brought new discoveries in our respective cities. It was through these embodied experiences that a deepened sense of care emerged: we started to care about each other and the more-than-humans we encountered. Recognizing the power and potential of the personal, we opened up *Urban Recipes* to include more people in this exploration. In the *test kitchen*, a multitude of personal perspectives was transformed into collective action through the shared experience of making and drifting.

This collective action in turn highlighted the “multilateral interdependencies” (Puig de la Bellacasa 2017, p.160) inherent in our world, compelling us to care.

Transforming the personal in this way helps cultivate a care that, rather than being “imposed from outside, a utilitarian rationalist contract or altruistic ideal” (Puig de la Bellacasa 2017, p.160), emerges from within and affects people beyond their individual selves. Moving from the personal to the collective and realizing the transforming potential of the expansion, this practice of care becomes both situated and inclusive.

DESTABILIZING THE QUOTIDIAN

Connecting two seemingly different things often brings about surprising results. In this project, we applied the functional juxtaposition of urban drifting and recipe-making to the everyday experiences of being in the city. This juxtaposition at once multiplied the capacities of individual experience and demonstrated the potential of everyday practices to offer new ideas for design. The practice of recipe-making, for example, provided vocabularies and tools that are both relatable and transferable. The embodied experience of walking and drifting made the introduction of conceptual themes experiential rather than didactic. Both practices – recipe-making and walking – convey a sense of familiarity that makes them welcoming and achievable. At the same time, the contrast between the necessity of intention and attentiveness in recipe-making and the desire for freedom and aimlessness in drifting brings a productive friction that encourages playful creation. The juxtaposition of discrete everyday practices and different personal interpretations engendered a dislocated familiarity, which in turn defamiliarized the everyday urban environments and prompted participants in the test kitchen to experience the city in fresh ways. Such an experience helped the participants not only to notice the quotidian, but also to cultivate a sense of care towards the more-than-human and one another.



The strategy of defamiliarization is often used in artistic and design practice to break away from established patterns and bring about new perspectives (Wilde, 2022). When the mundane is destabilized, we are transposed to a terrain of wonder, which encourages us to pay attention. Taking notice of the habitually neglected paves the way for breaking out of our inertia in order to have concern and practice care.

CREATING THE JOYFUL

Just as the notion of play was pivotal to the Situationist *dérive*, a sense of playfulness suffused *Urban Recipes*. In exchanging recipes with each other, the playful ignited a curiosity that sustained our initial exploration. In the test kitchen, this playfulness mobilized an active participation and brought to the fore new ways of knowing and relating. These new ways of knowing, as María Puig de la Bellacasa (2017, p.65) argues, can in turn foster unexpected connections and affection. Moreover, the engagements prompted by our project demonstrated that caring can be joyful and energizing.

Joy becomes especially critical to the way that we human beings, as a collective, respond to the ecological urgencies facing us today (Haraway, 2015). To create the joyful, therefore, means to utilize the generative potential of play. In doing so, we are able to affirm our capacity for caring and at the same time practice a care that is life-affirming.

POSTLUDE

In a world where prevalent precarity and carelessness risk paralyzing our capacity to imagine better futures, it is imperative to tell different stories (Haraway, 2016). Traveling on the journey that is *Urban Recipes*, we tell a story of how to realize design's potential to cultivate care in the more-than-human city. From the recipe to the test kitchen, we transformed personal sensibility into collective ways of caring for humans and beyond. By destabilizing familiar everyday practices, we rendered visible the more-than-human entanglements in urban spaces. Infusing the exploration with play, we moved beyond the act of noticing and fostered affective caring. These explorations have opened different avenues for future design practice. One direction would be to investigate how cultivating more-than-human care can transform the way designers conceptualize and build the smart city and its technologies. While our journey continues, we believe that our recipe-making practice provides food for thought to other designers interested in more-than-human care.

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ADVENT OF GAN — HOW DOES A GENERATIVE AI CREATE A MOODBOARD?

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ABSTRACT

The human creativity is now being supported, or challenged, by an easy access to generative tools utilising Artificial Intelligence (AI). Within the last few years, Generative Adversarial Network-based image generation tools have become available for the public. In this paper, we explore how one such tool, called Midjourney, could be used for generating moodboards. Our work focuses on exploring moodboard image generation via text-based prompts. We take note of the active online discussions, where examples and ethical concerns have strongly emerged during the late 2022. As a result, the AI produced imagery that the authors could not have produced themselves in any reasonable amount of time, if at all. The GAN-generated images are of high quality, and visually useable for design purposes. However, there are ethical concerns on the sources of the images used for training the AI systems, and copyright concerns on the outcomes.

INTRODUCTION

The purpose of moodboard visualisations in design ranges from informative to inspirational. They are useful for discussing with stakeholders, as well as tools for personal creativity (McDonagh & Storer, 2004;

Lucero, 2012). The creation of these visualisations has primarily relied on the skills and effort of a human being, creating by using a pen and a paper, recording images and textures via photography, and perhaps using programs such as Photoshop to edit and create something new. Designing these images takes time, effort, and consideration. The graphical and visual skills needed are essential for design, and are at the core of many different design fields beyond graphic design, such as industrial, fashion, and product design.

The human creativity is now being supported, or challenged, by an easy access to generative tools utilising Artificial Intelligence (AI). AI-based tools have been used and explored in design in many ways. These examples include generative product design (Dean & Loy, 2020; Cui & Tang, 2017), virtual reality environments and games (Jain, 2021), and more recently AI-supported UX design (Lu et al., 2022). Creative visualisations can be created without any graphical skill by using novel Artificial Intelligence (AI) tools using Generative Adversarial Networks (GAN) built on deep neural networks (Oppenlaender, 2022).

The first neural network — the perceptron — was an attempt to simulate brain behaviour (Rosenblatt, 1958). These networks were able to provide a simplistic replication of how memory and learning worked, but failed at simple non-linear logic functions. When these perceptrons were organised in multiple layers and trained in a new way — so that the learned information and errors of one layer could be passed to the next — their "comprehension" and expressivity improved (Rumelhart et al., 1986). When these multi-layer networks were used in several successive steps to create deeper stages of artificial neural networks, Deep Learning (LeCun et al., 2015) emerged. Deep learning enabled the identification of context. Due to this contextual layering, these deep networks are now able to identify and understand higher level concepts that



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humans take for granted, such as e.g. ‘a short woman playing basketball’, ‘red flowing hair’, or ‘a kukeri walking in New York’. GAN use this ability for a double purpose: to both generate an image based on a description, and to assess if the generated image matches the given description. Within the last few years, these AI tools have become available for the public.

While earlier forms of machine learning have been used to explore moodboard generation for design processes (Koch et al., 2019), our paper explores how GAN-based AI performs as generator of moodboards. However, since the most advanced GAN-based tools have only recently been made available, the research on applying them for any purpose rapidly emerging. These early papers on GAN usage focus on the generative process (Friedman & Pollak, 2021). Their use has already been met with great enthusiasm as seen in the rapid growth of e.g. reddit communities (e.g. r/midjourney with over 75k members since it's beginning, June 2022.¹). On the downside, they have also caused considerable anger within artistic community, since they are seen as a direct threat against the artists and copyright (Jacobs, 2022; Warzel, 2022). Thus, we can see that while there is plenty of room for research, it does come with baggage that warrants questions.

Therefore, our primary research question is *how can a GAN-based AI be used to produce moodboards that are useable in the design process?*

To answer this question, we examined the major AI image generators that are available for the public. We looked at the underlying generative mechanisms, and explain how these systems learn to create images. Next, we chose one advanced AI, Midjourney, and used it to generate moodboards. These images were then assessed by the authors on the usefulness when used as moodboards.

Finally, we discuss the challenges, research opportunities, and ethical concerns these systems present. Our investigation found that the AI:s are already so advanced that they can be used for creative generation of graphics.

HOW HAS AI BEEN USED IN VISUAL DESIGN?

As already mentioned, GAN are very recent, but similar approaches have already been integrated to existing software. The most common is Adobe Photoshop,

which already has contextual tools available. According to the lead developer², Photoshop's content aware fill is based on AI algorithms that are able to identify a what is the most similar contextual thing missing from the image (Barnes et al., 2009), and combine that with an estimation of what the missing thing could look like based on the use of ‘millions of photos’ (Hays & Efros, 2007). Since GAN-based systems are coming to the designers' toolkit, the implications of use and how they could be used has seen less research. Therefore, we need to first take a brief layman's view on the technology, and then use a generative system in practice to generate insights.

INVESTIGATING THE AI SYSTEMS

Since the topic of AI is a bit fuzzy, we chose to approach them by posing questions that directly influence the designers' work. We started by mapping out the visual GAN that are easily available for the public, and have summarised the major ones to the Table 1. We will then briefly explain the mechanisms on how these systems generate images, and how this affects the resulting graphics.

WHICH GAN ARE CURRENTLY AVAILABLE?

Our study began by identifying the AIs easily accessible for a typical user with an access to social media, as social media can provide information on the uptake. We first searched for the available AIs of different types, and identified the most accessible image generators. We then searched for any subreddits focusing specifically on those AI:s, and looked at subscribers and activity. We excluded specialised generators, such as GANs focusing on specific images like face-generators (e.g. This person does not exist³). Even though these systems could be useful for developing personas, they are too specialised for our purpose of making moodboards.

Table 1. Easy-access GANs and how to access them.

AI name	How to access
Stable Diffusion variants	Several different front-ends, such as huggingface.co and stablediffusionweb.com
Midjourney	Primarily through discord.
DALL-E variants	Several different front-ends, such as craiyon.com and labs.openai.com

¹ <https://subredditstats.com/r/midjourney>

² <https://stackoverflow.com/questions/2530449/how-does-content-aware-fill-work>

³ <https://thispersondoesnotexist.com/>



Our search identified three major GAN systems and their versions; Stable Diffusion, DALL-E, and Midjourney, shown in Table 1. Out of these, Midjourney is generally seen as the most advanced, at the moment of writing. Stable Diffusion and DALL-E, and their variants and versions, are available through various websites which provide different types of training data. To understand the meaning of training data, we will next look at how these systems work.

HOW DO THE GENERATIVE AIS WORK?

The AI systems work through written text-prompts. The user writes a short description, such as *'hungarian dances on the street'*, and the AI will then begin generative-interpretive cycle. For simplicity, we'll say that GAN has two competing AIs working against each other, hence the name Generative Adversarial Network. The first AI will try to create images based on the prompt. The second AI will try to show that it is false, meaning that it would could not be seen as 'real'. It does this by interpreting the concepts visualised in the generated image, and comparing that result to the initial prompt. If the second AI 'sees' the image as false, i.e. not matching the prompt in the generated image, then the first AI will try to improve the image. These steps will be repeated until the second AI interprets the generated image to match the prompt adequately.

This means that both 'sides' of GAN must be trained in order for the overall system to work. The training data is usually vast, containing millions of images. In case of DALL-E 2, the dataset was approximately 650 million images (Ramesh et al., 2022). Different systems and different front-ends have their own approaches. It is not always clear which sources and images have been used for training. OpenAI who are behind DALL-E 2, have issued clarifications on how to deal with questionable materials⁴. To make it more confusing, variants of both DALL-E and Stable Diffusion have different websites that present systems trained with different image types. For example, NovelAI, is trained with Anime images only. However, to keep our work consistent with one platform and training materials, we chose to use Midjourney.

PRACTICAL USE — PROMPTS, RESULTS, AND UPSCALING

The AI we have chosen, Midjourney, works through text-based prompts via Discord. Midjourney has created an open google text-document⁵, suggesting ways to write prompts. They suggest to try prompts with artists' or studios names, such as *"father by MC Escher"*. They list 'styles' such as Gustav Klimt, Alfons Mucha, Pablo Picasso, and Studio Ghibli. These suggest that the AI has been trained with specific source materials, and anyone can use those to prompt the AI to produce an image of specific style.

For each prompt given via Discord, Midjourney creates four images, saved as one large image with four quadrants. The user can then continue forward from these images, e.g. by asking new variants based on one image, or upscaling an image. Variant-option makes small adjustments to the chosen image. Upscaling attempts to keep the image same while enlarging it. This upscaling process always creates some variance, so the user will never get exactly the same image.

METHODOLOGY

Our methodology consists of exploratory use of Midjourney, and using reddit to investigate how people have used Midjourney. We relied on Midjourney-subreddit⁶ for any insights on the prompts as a form of crowdsourcing. Before we started to generate the images for this paper, we spent roughly 8h of machine time to learn how to write prompts. This means that we've generated around 630 images including derivatives and variations, and explored how the AI interprets the prompts over several weeks.

GENERATING MOODBOARDS

In this section, we will explore how the AI can be used to generate moodboards. We will explore how to create moodboards, and how much they require additional work after they have been produced by the AI. Our prompts will always include "--q 2 --v 4" parameters at the end. These improve visual quality, and use the latest Midjourney version, respectively. Furthermore, we will always show the first resulting image with all four variations as outputted by the AI, except when specifically stated to be an upscaled image.

⁴ <https://openai.com/blog/dall-e-2-pre-training-mitigations/>

⁵

<https://docs.google.com/document/d/1XUT2G9LmkZataHFzmuOtrXnuWBfhvXDAo8DkS--8tec/edit>

⁶ <https://www.reddit.com/r/midjourney/>

Interventions] __ [Realities

CREATIVITY AND IMAGINATION — MAKING THE MOODBOARDS

As our test, we gave the AI some specific prompts and see how wild interpretations it generates. Our initial goal is to create imagery suitable for a moodboard. Thus, the prompt will be “moodboard”. The resulting image can be seen in Figure 2, and we can see that the output does indeed look like an image of a moodboard. However, upon examination, we can see that while interesting, the AI has given each of the four panels it's own context or theme. Without going too deep with our subjective interpretation, going clock-wise and starting from the top-left, we have 'magenta and cyan', 'Cuban flair', 'rustic horror', and 'pensive coolness'. With the exception of our 'rustic horror', images of this style could be easily found in fashion magazines.

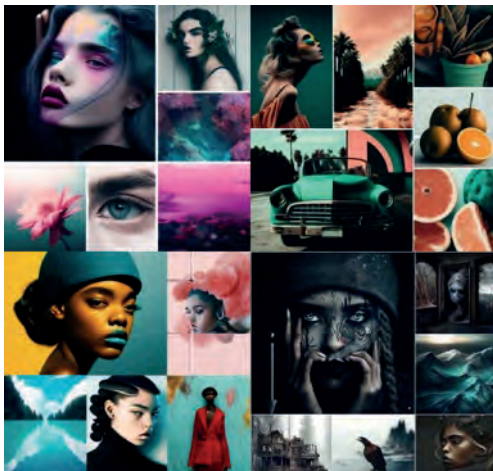


Figure 2. A moodboard, as interpreted by Midjourney.

To
ru
ing
his,
we ask for a new moodboard, with a prompt “moodboard, objects from countryside”. This result can be seen in Figure 1, and on a surface glance, it looks like imagery stemming from objects found in the countryside. One common approach appears to be that the objects are taken out of context, and they are mostly stand-alone. There are some images that are not about objects, but scenes. However, they seem to fit the themes. Compared to the previous moodboard, these panels do not seem to have their own unique style between them.

However, this image does not look natural. The objects are identifiable as something that could be found in the countryside, but some of them do not look realistic. For example, the container in the lower left corner appears to be some kind of jar made out of sheet metal, but has bands with belt buckles on them. On a surface, everything looks ok, but a closer inspection reveals an uncanny valley.



Next, we decided to try to create a moodboard with realistic images. To do this, we looked at reddit to find prompts that had generated realistic and high definition images. One reddit-user had created a very realistic looking image of a waterbending monk⁷, so we took the end of the prompt given in the post, and adapted it to our previous prompt: “moodboard, objects from countryside + cinematic shot + photo taken by ARRI, photo taken by sony, photo taken by canon, photo taken by nikon, photo taken by hasselblad + incredibly detailed, sharpen, details + professional lighting, photography lighting + 50mm, 80mm, 100mm + lightroom gallery + behance photography + unsplash”.

This prompt contains suggestions that draw from different photographic materials, sourcing specific camera models and photography websites such as behance⁸, unsplash⁹, and Adobe Lightroom¹⁰. The prompt describes additional qualities in an attempt to generate a sharp, detailed image.

⁷ <https://www.reddit.com/r/midjourney/comments/z3af11/waterbending/>

⁸ <https://www.behance.net/>

⁹ <https://unsplash.com/>

¹⁰ <https://lightroom.adobe.com/learn/discover>



Interventions] __ [Realities



The result is shown in Figure 3. These results are much more realistic, and while the AI seems to like hats in fields, these objects make sense. There are some minor illusion-breaking details, such as the cups going over boundary near the upper right corner. There are also two images that are not really objects, and look like scenery images. However, this image is quality-wise high enough to pass as a moodboard made of pictures of countryside objects.

For our third and final moodboard, we examined how the AI would perform with a colour-based moodboard. Using previous prompt, we changed "objects from countryside" to "hues of red". The resulting image can be seen in Figure 4. These images are rich in red, and includes both human faces and provocative imagery in all results. As our prompt suggested "hues of red", the bottom two panels contain sample-variations on the colour red, while the upper panels do this purely through imagery. As with our first moodboard, images of this style could be easily found in fashion magazines.



Figure 4. Moodboard of *hues of red*.

Finally, we upscaled the lower-left image of the hues of red, shown in Figure 5. Since the AI re-interprets the image every time, we notice not-so-subtle differences to the original image. All three images on the bottom have considerable changes. Starting from left, the original image had only colour hues, while the upscaled version has textures and what appears to be something resembling a person. The middle image in the bottom has likewise changed, there are some unknown physiology in the abdomen, and the hair has changed colour to white. Finally, we see a pale red-robed figure has appeared into the middle of the field of red shrubbery.



Figures 2, 3, and 4 show, that the AI is capable of producing high quality imagery that is almost indistinguishable from photographs. However, care must be taken with upscaling, because the images will invariably be different from what was asked and was previously seen. As such, we see that this AI can produce imagery suitable for moodboards, requiring very little effort and skill.

DISCUSSION AND A WAY FORWARD

We have used Midjourney to create images of moodboards. The AI produced imagery that the authors could not have produced themselves in any reasonable amount of time, if at all. Our exploratory approach to using the AI as presented in this paper also answers our primary research question, *how can a GAN-based AI be used to produce moodboards that are useable in the design process?* However, this result does not come without concerns of copyright and ethics, and subjectively, the process of generating the moodboards seems clinical and intriguing.

WHAT ARE THE CHALLENGES FOR UTILISING GAN IN A DESIGN PROCESS?

The moodboard generated directly from the prompt is obtained within some seconds and without a need for retouch. The greatest strength of AI graphics generator lies on the ability to produce visualisations that provoke imagination at different styles and content combinations. However, the designers tend to be in a dialogue with their materials, and the moodboards are seen as sensory-centric approach containing both images and physical materials (McDonagh & Storer, 2004). While visual images are relied by novices, both images and physically sourced visual and tangible materials are most useful for designers (ibid.). The imagery generated with Midjourney is easy and effortless to create, the process being almost clinical. The sensory-centricity is not there, as one is simply typing. And unless the images are made into 3D-objects via e.g. rapid prototyping, the resulting moodboard consists only of images.

Regardless, the generated images are interesting and can be themed during the prompt-generation. We see no reason to doubt that these images would not be useful for design mood boards within HCI (Lucero, 2012). We cannot help but wonder how much the act of trying out the generative AI provoked our imagination. In fact, the research on an AI-tool for developing moodboards emphasised the role of the process, when using the tool (Koch et al., 2019). In that sense, there was an anticipation towards the resulting image, to see how well it matched the given prompt. This process itself may be useful in provoking thoughts, and we believe that this kind of "generative process dialogue" with the AI could be interesting for further study.

WHAT ARE THE ETHICS OF USING AN AI?

Even though AI systems can be, and are, trained legally with copyrighted images, using the outcome may not be safe from copyright infringement. *We cannot be sure if our images are breaking copyright.* Another equally great concern is that we cannot know how much we are exploiting the skill and competence of the artists who have spent many years learning their skills. Just before submitting this paper, there was a controversy concerning the images that are used for training Midjourney. Users began to notice that watermarks from Getty were appearing in some generated images¹¹. After this, there began to emerge discussions in r/midjourney about images that show other watermarks

¹¹

https://www.reddit.com/r/midjourney/comments/zesklv/getty_images_watermark_appears_in_results_has/

from the stock photo sources. At least iStock, Getty and Shutterstock watermarks have been reported with the generated images. There have also been reports of signatures, or something resembling an artists signature in the generated images. These have raised a considerable concern in a stock photo company (Jacobs, 2022). Furthermore, when a journalist used an AI-based visualisation in their article and the resulting backlash from the artistic community was enormous (Warzel, 2022). However, given the extremely fast-paced development of the AIs, the community is at the forefront. We utilised reddit as a source for detailing and learning different prompts, and we also became aware of the issues via reddit. Thus, the use of the AI is intimately tied with the larger creative community, whether as a source or as a generative seed.

These concerns come down to two factors. Firstly, in order to be useful, GAN requires thousands to hundreds of millions of images for training. Easiest way to get a massive set of images is to use stock photos. These datasets are already labeled, and each image comes with a ready-made description. Secondly, the images produced by such systems can be created in a very short time without any artistic skill, through a detailed text in the form of a prompt. Even though the images are a result of a computational system, the parameters of this computational system is based on thousands of humans' work. These two factors together make the use of GAN image generators problematic, as one has to pit their usefulness against the source materials for training. Ethics of AI are an ongoing hot topic, which warrants further research.

CONCLUSION

In this paper, we have used GAN based AI to generate images for moodboards. The GAN images are of high quality, and visually useable for design purposes. However, they come with concerns about copyright and exploitation of artists' work. Our future work will focus on utilising the AI-based generative systems for design visualisations. This specific sub-field of AI is advancing rapidly. Midjourney had two considerable updates during the process of writing this paper, and the images were redone with the latest version. Thus, it is safe to say that when you are reading this paper, the system has advanced beyond the images shown in this paper. Our research has received no external funding, and the access to Midjourney was paid by the authors.



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MAPPING AND SENSING DEWEY'S SITUATIONS AS DESIGN AND SOCIAL SCIENCE METHODS

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ABSTRACT

This exploratory paper proposes the use of pragmatist philosophy as a methodological bridge between design and the social sciences. It develops John Dewey's ecological notion of the 'situation' into two design methods for mapping and sensing situations. The first method, called 'mapping situations' is based on Adele Clarke's concept of 'situational mapping' and aims to pinpoint actor relations, concealed power dynamics, and areas for intervention. The second method, 'sensing situations' helps to develop a deeper understanding of a situation through embodied experience. The combination of these cognitive and affective methods offers a holistic approach to deal with complexity and ambiguity. The potential of these methods is to use Dewey's situation as a shared unit of analysis that allows designers and social scientists to work together and address problems in new and innovative ways that go beyond the limits of their respective fields.

INTRODUCTION

The work of the pragmatist philosopher John Dewey has had a significant influence on the field of design (Dalsgaard, 2014). It has been used to explain the nature of design as in Donald Schön's writing on 'the reflective practitioner' (2016), to explore experience in design (McCarthy and Wright, 2004), and to position

pragmatism as the "natural epistemological base" of design (Melles, 2008, p.5). In recent years, pragmatism has experienced a resurgence across many disciplines and may offer the potential to bridge the gap between design and other disciplines. Yet, despite Dewey's influence, there have been few attempts to translate his ideas into concrete design methods (Stompff, van Bruinessen, et al., 2022).

This exploratory paper responds to the need to develop Dewey's work into explicit methods for designers as well as Wegener and colleagues' (2022) call for critical engagement with Schön's 'design inquiry'.

The paper focuses on Dewey's concept of the 'situation' and the 'situational analysis' method developed by Adele Clarke (2005) to look for common ground between design and the social sciences. It proposes mapping and sensing situations as holistic alternatives to the established notion that situations need to be conversed with or framed. The paper argues that via these methods, Dewey's situations can create a space for new interdisciplinary collaborations across design and the social sciences.

WHAT IS A SITUATION?

John Dewey articulates the notion of situations in his book *Logic: The Theory of Inquiry* (1938), where he suggests that all research, or inquiry as he calls it, takes place within situations. Inquiry in Dewey's terms is a form of problem solving with a goal of shifting from an indeterminate to a determinate situation. The situation is thus the broader problem space that inquiry operates in.

"What is designated by the word 'situation' is not a single object or event or set of objects and events. For we never experience nor form judgments about objects and events in isolation, but only in connection with a contextual whole. This latter is what is called a 'situation' (Dewey, 2008, p.72)."



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Dewey's notion looks like the common-sense notion of 'context', yet he has in mind something more specific:

"In actual experience, there is never any such isolated singular object or event; an object or event is always a special part, phase, or aspect, of an environing experienced world—a situation. The singular object stands out conspicuously because of its especially focal and crucial position at a given time in determination of some problem of use or enjoyment which the total complex environment presents. There is always a field in which observation of this or that object or event occurs (Dewey, 2008, pp.72–73)."

Situations only exist in relation to the inquiry and do not exist independently. Scholars have described Dewey's notion of situation like an environment that an organism lives within and interacts with, but is also mutually constituted by (Brown, 2012). Situations thus envelop the researcher alongside a heterogenous mix of humans and nonhumans, physical objects, ideas, discourses, and settings that all together form the situation. This definition has proved difficult for some scholars who have questioned how it is possible to define the limits of a situation, and whether this means that a situation includes the whole world (Brown, 2012, p.268). Yet, for Dewey situations have clear limits which are set by the relevance and causation of elements.

"Situations are agent relative and practice relative. They depend on the needs and abilities, habits and activities of the agent or agents engaged in a certain kind of practice. What counts as relevant will be (at least partially) a normative question, dependent on the nature of the practice or activity in question and what things are proper to the practice or activity (Brown, 2012, p.273)."

This means there are no predetermined elements or scope of a situation. The range of elements and extent of the situation can only be defined by the researcher in relation to the specific inquiry.

While this definition of a situation may appear vague and unsatisfactory, its usefulness is that it places the onus on the researcher to empirically identify the heterogenous elements that are affecting the inquiry and forming the situation. Thinking in terms of situations means searching for all the things that matter, such as human sensation and nonhuman objects but also looking for discourses, and agendas that are not immediately observable. The researcher and their own agenda are actively involved in the situation and impossible to remove.

DESIGN AND SITUATIONS

How can Dewey's situations be used in design? Most of the design research on Dewey has focused on design

inquiry's epistemic capacity, while the unique potential of the situation itself has been somewhat neglected.

Schön describes design as a 'conversation with the situation' (Schön, 1992), where the designer enters into an iterative process that, "shapes the situation, in accordance with his initial appreciation of it, the situation 'talks back,' and he responds to the situation's back-talk." (Schön, 2016, p.79). For Schön this conversation involves translating the complexity of the situation into a simplified problem that can be addressed by design materials such as cantilever beams as in one of his architectural examples (1984). Schön and many other researchers have described this as 'framing' which means "imposing a framework on a complex situation by naming 'how the situation is seen' (Stomppff, Joosten, et al., 2022, p.4)".

Dorst suggests, that "if the problem situation is familiar, and the designer has dealt with such matters before, a frame will be an integral part of the way the designer is 'reading' the situation, and will come to mind straight away (2011, p.527)". While in more complex situations the designer reframes the problem in relation to the agendas of their client. The result being "an accepted brief that is understood and agreed upon, [...] in which the designer's and client's frames have come to overlap or align to a certain extent (Paton and Dorst, 2011, p.575)".

Yet, my proposition is that this approach to situations as something that can be 'conversed with' and 'framed' are flattening the potential of Dewey's situations. Brian Dixon highlights Dewey's warning that accepting a particular idea outright can prematurely 'cut' the inquiry short (Dixon, 2020, p.78). What can be lost is the nuance and potential of the situation to surprise the designer through its heterogeneous mix of actors and the impetus to go beyond what was known before entering the situation.

SITUATIONAL ANALYSIS IN THE SOCIAL SCIENCES

Adele Clarke is a contemporary sociologist who has used Dewey's notion of the situation to develop the method of 'situational analysis' (2005). The method is a form of postmodern grounded theory that blends Dewey's situations with symbolic interactionist interpretive frameworks, Foucauldian discourse analysis and Actor-Network Theory's focus on nonhumans. The goal of the method is to deal with complexity in research without false reductionism or chaotic ambiguity. The method has proven popular within the social sciences and been accepted as a useful way of bridging across social science fields.

The distinctive aspect of this method is its focus on heterogenous human and nonhuman actors which it derives from Dewey's situation as its core unit of analysis. This is unusual in the social sciences, which

usually focuses on predetermined human actors and social relations.

Situational analysis includes three types of maps: situational maps, social worlds/arenas, and positional maps. The first stage of creating a situational map involves creating a ‘messy map’ which “lays out all the major human, nonhuman, discursive, historical, symbolic, cultural, political and other elements found in the research situation of concern **as framed by those in it and by the researcher** (Clarke, Washburn and Friese, 2022, p. 10 emphasis in original)”.

Clarke suggests the criteria for what elements to include on the map are: “who and what are in this situation; who and what matters in this situation; and what elements make a difference in this situation (Clarke, 2005, p.87)”. The goal is to create a comprehensive overview of all the elements involved in a situation, and to organise them into an ‘ordered situation map’ that places the elements into these categories:

“INDIVIDUAL HUMAN ELEMENTS/ACTORS e.g., key individuals and significant (unorganized) people in the situation, including the researcher

COLLECTIVE HUMAN ELEMENTS/ACTORS e.g., particular groups; specific organizations

DISCURSIVE CONSTRUCTIONS OF INDIVIDUAL AND/OR COLLECTIVE HUMAN ACTORS as found in the situation

POLITICAL/ECONOMIC ELEMENTS e.g., the state; particular industry/ies; local/regional/global orders; political parties; NGOs; politicized issues

TEMPORAL ELEMENTS e.g., historical, seasonal, crisis, and/or trajectory aspects

NONHUMAN ELEMENTS/ACTANTS e.g., technologies; material infrastructures; specialized information and/or knowledges; material ‘things’

IMPLICATED/SILENT ACTORS/ACTANTS as found in the situation

DISCURSIVE CONSTRUCTIONS OF NONHUMAN ACTANTS as found in the situation

SOCIOCULTURAL /SYMBOLIC ELEMENTS e.g., religion; race; sexuality; gender; ethnicity; nationality; logos; icons; other visual and/or aural symbols

SPATIAL ELEMENTS e.g., spaces in the situation; geographical aspects; local, regional, national, global spatial issues

MAJOR ISSUES/DEBATES (USUALLY CONTESTED) as found in the situation; and see positional map

OTHER KINDS OF ELEMENTS as found in the situation

RELATED DISCOURSES (HISTORICAL, NARRATIVE AND/OR VISUAL) e.g., normative expectations of actors, actants, and/or other specified elements; moral/ethical elements; mass media and other popular cultural discourses; situation-specific discourses (Clarke et al., 2022, p.12).”

These structured categories are intended to help analyse the nature of the situation and to identify power dynamics and excluded elements that Clarke calls ‘implicated’ or ‘silent’ actors. Clarke and colleagues highlight that this foregrounds multiple ways of knowing and supports “feminist, participatory, decolonizing, Indigenous, (post)colonial and related research (2022, p.21)”. The last step in the map is to draw connections between elements to see how they relate:

“Center on one element and draw lines between it and the others and **specify the nature of the relationship by describing the nature of that line**. One does this systematically, one at a time, from every element on the map to every other (Clarke, 2005, p.102 emphasis in original).”

For social scientists, the goal is to externalise their understanding of the situation. This allows them to reflect on the relationships they identified and plan the next stage of research.

MAPPING SITUATIONS

My proposition is to integrate Clarke's situational analysis into design by focusing on the situational map. Among Clarke's three mapping techniques, this is the one that aligns most closely with Dewey's notion of the situation and is most pertinent to design due to its straightforwardness. Although this method has not yet been practically employed in design, it presents significant potential for approaching situations in a nuanced way. The technique makes it difficult to conceive design artifacts as isolated and self-contained entities. According to Kaszynska and colleagues, Clarke's approach leads to a networked, ecological, and systemic design practice (2022).

A systemic perspective is not in itself novel in design, where designers regularly employ systemic visualization and mapping techniques like giga-maps (Sevaldson, 2011) and synthesis maps (Jones and Bowes, 2017). Giga-mapping for example aims to create a visual representation of the complexity of a situation:

“[Giga]maps try to grasp, embrace and mirror the complexity and wickedness of real life problems. Hence they are not resolved logically nor is the designerly urge for order and resolved logic allowed to take over too much and hence bias the interpretation of reality. (Sevaldson, 2011, p.138).”



However, the mapping situations approach is distinct in that it does not seek visual complexity for the sake of complexity, but instead emphasises meaningful relationships between elements. The key focus is on analysing which elements are impacting one another, thereby providing insights into power dynamics. It is essential to pay attention to silent actors who have been deliberately excluded. The structured categories help to introduce entities such as collective actors, discursive constructions, and political elements that are typically not part of the designer's vocabulary or way of thinking. This approach may assist designers in engaging with situations in novel ways, moving away from solutions based on objects and towards more multi-layered and multi-sited design interventions. The method presents new kinds of actors and new sites where design could be implemented.

Situational maps also require the researcher to include themselves in the map enhancing reflexivity of the process and asking the designer to highlight their own capacities for transforming the situation with which they are engaged. In this way this method addresses one of the main limitations of current systemic mapping approaches where visualisation often becomes a static endpoint (Nold, 2021). In a design context, situational maps become a methodological tool for changing the world.

SENSING SITUATIONS

The second method I want to propose for engaging with Dewey's situations is to encounter and sense them.

Dewey (2008) suggests that the situation is not in the mind but something that is embodied and must be 'sensed' or 'felt' as a 'qualitative whole'. Schön interprets this as the designer feeling like they are in 'the zone' (2016, p.54), much like Csikszentmihalyi's notion of flow (2013). However, I argue that the potential for situations to surprise and disrupt the designer is not adequately captured in the notion of flow. In order to recognise the disruptive potential of situations requires them to be treated less naturalistically as something unknown and more 'alien'. Brown notes that:

"A situation is experienced but is not a subjective state, situations include real objects, events, agents, their relations, the background on which all of those things appear, and a qualitative, experienced, or experienceable qualitative unity (Brown, 2012, p.269)".

Situations involve tangible, material entities that the designer must encounter sensorially to comprehend. I suggest that situations must be intentionally encountered with the body in a visceral manner. This can be formalised into a design method by adopting ideas from 'soma design' (Höök, 2018) and performative theatre and radical clowning techniques (Sørensen, 2015) to establish a bodily connection with the situation.

I present a vignette of a two-week workshop where a group of approximately ten designers collaborated on the theme of prototyping for disability in the city. Although Dewey was not discussed during the workshop, the approach I adopted as one of the two design mentors was centred on a pragmatist understanding of the situation.

At first, the group of designers were stuck not knowing how to engage with the complexity of the disability topic and the scale of the city. It took the team a long time and help from the mentors to move beyond the initial problem framing. What helped, was encouraging the team to play a range of improvisational trust games that explored each other's physical and emotional constraints and boundaries. This allowed the team to focus on their relations and differences and situate the topic of disability with their own bodies. The final prototype took the form of a staged public event inside a gallery environment, where members of the public were invited to experiment with their perceptions of ableness. Participants explored multiple zones to play ball games while blindfolded, walk through narrow ball pits and room-scale installations where they encountered sound and light sensations.

During the design process, the sensory techniques had operated as a 'situating strategy' (Gedenryd, 1998, p.155) that allowed the team to explore the situation and identify what was important. The use of the radical clowning techniques encouraged the team to 'feel' beyond the individual body and connect with the interpersonal relations in the group and the wider cultural and political framings of disability to explore public embarrassment and insecurity.

At the end of the project, the design team mentioned that the process had been transformative for them. Their design training had not prepared them for these kinds of unfamiliar design situations and the process of 'sensing' had helped them to translate the abstract and challenging concept of 'disability in the city' into something they could design with.

DISCUSSION

This paper proposes two ways of using Dewey's concept of a situation that differ from the established notions of a 'conversation with the situation' (Schön, 1992), or 'framing' the situation (Dorst, 2011).

'Mapping situations' identifies heterogenous actor relations, concealed power dynamics, and areas for intervention into a situation. 'Sensing situations', encourages designers to establish a bodily connection with the design situation. Combining these approaches allows the designer to become sensorily attuned to the situation while engaging with the mix of materials, discursive constructions, and exclusions. The result is a

holistic method that integrates cognitive ‘mapping’ and affective ‘sensing’. Unlike established design approaches to Dewey’s situation, the designer does not have total control to frame the situation as they wish, since the complex situation is never fully knowable. Instead, these methods help designers to deal with complexity and ambiguity by sensing and mapping to affect and be affected by a situation.

The aim is not to replace existing design approaches but to operate somewhat like ‘probes’ (Gaver et al., 1999) at the ‘fuzzy front end’ (Sanders and Stappers, 2008) of the design process, which is characterised by uncertainty and ambiguity. Then existing design approaches and methods such as stakeholder-driven, critical design and service-design approaches can be used for prototyping and implementation.

On a deeper level, the advantage of these methods is that they create a shared space for collaboration between design and the social sciences based around pragmatist philosophy. Dewey’s ‘situation’ has the potential to become a sensitising tool in the same way that social science concepts such as ‘infrastructuring’ (Karasti, 2014) and ‘boundary objects’ (Star and Griesemer, 1989) have become accepted tools and been fully embraced in the design discourse.

The strength of ‘the situation’ is that it balances on the cusp between complexity and transformation. Clarke’s work in the social sciences has demonstrated that situations can identify relations and power dynamics without false reductionism. While design has shown that the researcher can actively shape and transform situations. This makes ‘the situation’ a powerful metaphor for being able to intervene into complexity.

This coincides with recent efforts in the social sciences to re-evaluate Dewey as offering a pragmatist vision for a material politics that can tackle the ecological crisis the world is facing (Marres, 2023). The social sciences are looking to develop ‘inventive methods’ (Lury and Wakeford, 2012) to actively transform the researcher and the world together. Although these methods draw inspiration from design, what is lacking are conjoined methods that resonate in both disciplines. Therefore, this is the ideal moment to engage more deeply with Dewey’s idea of ‘the situation’ and develop it into a shared unit of analysis that enables designers and social scientists to collaborate and go beyond the limits of their respective fields.

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INTENTIONALLY LEFT BEHIND: INDEPENDENT DESIGNERS “FREE SPACES” AT THE BOUNDARIES OF ART AND FASHION

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ABSTRACT

Fashion is both a global industry and a domain for small-scale independent designers who approach fashion as artistic practice. Fashion design practices that are positioned outside of the industrial fashion system are enacted in the “gaps” between the fashion industry and fine art and form alternative modes of fashion to those of the dominant fashion system. Fashion design practice in between discursive categories, institutions, and systems form a ‘middle ground’ between fashion and art, without fully belonging to either. Such modes of fashion are enacted in a context of “in betweenness”. This paper engages with how this may leave the space usually occupied by the human body is left blank as a demarcation of this ambiguous position. We apply the analytical concept of boundary work” and “free spaces” in exploring emerging fashion practices that probe new territory, ones prompting us to review prevailing notions of fashion and its structuring systems.

INTRODUCTION

This paper concerns the emerging practices of independent fashion designers forming responses to the looming climate and nature crisis and the dysfunctional frames of what Femke de Vries (2022) refers to as the dominant industrial fashion system. The fashion sector is shaped by economic and cultural processes in marketdriven cycles of consumerism based on the ideal of economic growth, resulting in product obsolescence and resource misuse (Fletcher & Tham, 2021, von Busch, 2008). This system is so ingrained in our minds that *fashion* and *the fashion industry* tend to be perceived as synonymous, over-shadowing other modes of fashion practice beyond market-driven ones (Ibid). There is a pressing need to readdress the very premises of fashion, more fundamentally than simply through more ethical manufacture (Vänskä, 2018). It requires the reorientation of fashion away from consumerism and identity formation, towards approaching fashion as critical practice and in terms of knowledge production.

The economic and cultural conditions for independent fashion design form an important background to the emergence of alternative fashion practices in Norway. Understanding fashion’s role in the damaging of the planet, several independent fashion designers in Norway have withdrawn from the fashion system and the fashion industry, seeking new terrains for autonomous fashion practice within the arts (Zanon, 2022). This detachment is coupled with existing possibilities for project funding in the cultural sector that favours commercial fashion brands on the one hand, or fine art and crafts on the other. Here, independent fashion designers tend to end up in between. Important for the move towards the arts



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is also the need for slowing down for sustaining artistic integrity as well as other aspects of life (Curtis, 2022, Chun, 2022). In this migration, however, the human body, is left behind.

These independent professionals practice fashion design beyond industrial frameworks in spaces that sits *between* fine art and fashion (Skjulstad & Eritslund, 2022, Skjulstad, 2022), demonstrating the permeable border between fashion and textile art (Zanon, 2022). This in-between space becomes particularly evident in articulations of fashion where the human body is intentionally absent, such as described in this paper. These interventions into prevailing presentations of fashion, signals the demarcation of a particular conceptual and material fashion space that sits between dominant categories, institutions and frameworks in acts of forming new spaces for autonomous fashion work (Ugelvik, 2019). Intentionally leaving the space usually filled by the living human body open for other material articulations, these works prompt us to reconsider prevailing ideas of fashion, its frames and the structuring mechanisms in which it tend to be embedded; conceptually, institutionally, and materially. Articulations of fashion that omit human bodies can form conceptual space for imagining fashion beyond wearable garments, and thus also beyond its frame of reference as products for human consumption.

The body's absence in gallery spaces create evident frictions between the industry and fashion design's role and status away from the industry's devastations. As argued by Vänskä (2018, 18), rather than engaging with clothes as "mute tools with which individuals fashion themselves", we should, as in a post-humanist view on fashion, "treat clothes as active and vibrant agents that materialize and mediate understanding of the human". In essence this may affect our very understanding of what fashion is and can be (Skjulstad, 2022). Such reorientations are discussed from a post-humanist perspective by Vänskä (2018), as decentred fashion practices, ones where the human body does not form the focal point. In leaving the body out, fashion emerges as a field of design with a scope much wider than the creation of fashionable commodities for human consumption, including as means for knowledge production.

In this paper, we approach such emerging fashion through the concept "free spaces" with reference to Polletta (1999), and boundary work with reference to Gieryn (1983) and Langely et al. (2019). We return to these concepts shortly.

This paper springs out from a research project on the mediational practices and cultural production of independent Norwegian fashion designers, conducted between 2019 and 2022. One surprising finding was the

lack of conceptual frames of reference for fashion design practices that are enacted outside of the structures and frames of the fashion industry and created for and disseminated in gallery settings. Jeppe Ugelvik (2019) refers to fashion and art practices that transgress institutional boundaries as "fashion work", and approaches fashion as having the capacity for transgressing reductive categorisations when approached in terms of work. While much has been written on the intersections between fashion and art and the need to productively overcome binary distinctions (e.g., Pecorari, 2009), Diana Crane (2012, 101) points to utility as a distinguishing factor that separates artists and fashion designers.

"Artists who design clothes as works of art are not interested in utilitarian or commercial aspects of this activity. Some of these artists deliberately create dresses that cannot be worn. Alternatively, some fashion designers have become artists and prefer to exhibit works that are unique in galleries and museums instead of creating fashion collections."

Perspectives that acknowledge that fashion design can reach beyond the industrial cyclical fashion system and serve key roles in cultural critique (Geczy & Karaminas, 2017, Bik Bandlien, 2009, Falck Øien & Zanon, 2022) as well as forming sartorial articulations of knowledge production (Vänskä, 2018) situates fashion designers as capable of practicing fashion design for gallery, or museum spaces.

Several of the designers who contributed to the study find themselves working in what they perceive as a discursively unresolved position between the fashion industry and the art world, whilst not fully belonging to either, or as in processes of detaching from the fashion system. Fashion tends to be regarded as synonymous to the 'fashion industry' and not as encompassing a range of fashion practices and systems outside of, or in parallel with the dominant industrial fashion system (de Vries, 2022). Fashion practices that form designerly acts of resistance against the dominant industrial fashion system and its presentational modes and settings consequently emerges as a driving force in current reinterpretations of fashion as a mode of cultural production (Skjulstad & Eritslund, 2022). However, as opposed to understanding such presentational and contextual shifts as a means for leaving fashion altogether when entering the gallery space, we approach this repositioning as instances of boundary work that seeks to carve out new "free spaces" for fashion design. What emerges is a design field that is deeply involved in transitioning from conceptions and structures that lock fashion design to the design of commodities. This process of transition is most evident in works that point beyond utility and in its resulting reconfigurations of the

relationship between the human body and the garment/work. Fashion that is not created for being worn by humans asks us to rethink relationships between wearer and worn (Valle-Norhona, 2019), altered notions of utility, and reconfigurations of value in fashion. With reference to Norwegian independent fashion design practices that prompt us to question what fashion is and holds the potential to be, we approach the space usually created for the human body as intentionally left blank as a site for boundary work for generating free spaces for fashion.

We ask the research question, “how do independent Norwegian fashion designers enact different conceptualizations of “fashion” in carving out “free spaces” for fashion as articulations of cultural production beyond the fashion industry?”

This paper takes an interdisciplinary approach to fashion, combining perspectives from practice-based approaches, sociology, and post-humanist explorations of the body in fashion studies. First it presents perspectives on fashion design in the arts. Secondly, it presents the concept of boundary work (Gieryn, 1983) and free spaces as an analytical lens to explore the ways designers enact different understandings of the body, and the subsequent consequences for demarcating fashion as design as cultural form.

THEORETICAL BACKGROUND

Fashion is not historically regarded as a subject deemed ‘worthy’ of serious enquiry (Chun, 2018). However, this is changing (Svensen, 2014). The term ‘fashion’ refers to a very diverse set of phenomena. For avoiding a Euro-centric perspective, Welters and Lillethun (2018,16) define fashion as “changing styles of dress and appearance that are adopted by a group of people at any given time and place”. They also stress that fashion is both a verb and a noun, and a “social process with components of change, temporality, spatiality, and adoption by group of people” (Ibid, 31). Rebecca Arnold (2009, 7) refers to fashion as encompassing: “a vibrant form of visual and material culture that plays an important role in social and cultural life”. The cultures of fashion are temporally and geographically rooted (Welters & Lillethun, 2018), but across contexts, they, as stated by Jennifer Craik (1993, X) “demonstrate the cultural politics of their milieu”. As over-consumption and over-production of fast fashion garments within a deep-rooted industrial system is increasingly politically governed, including more recently the EU, the need for different modes, systems, and ways of designing and doing fashion is still pressing (Fletcher & Tham, 2021). In approaching fashion in terms of practices, Otto von Busch (2008) refers to the Deleuzian concept of becoming and regards fashion as in an endless state of becoming something new. This forms a backdrop for

contemporary fashion design practices in the arts that leave the body behind in in the process of expanding the forms and systems in which fashion designers may contribute with critical, cultural expression and knowledge production.

THE BODY IN FASHION

The relationship between fashion and the body is a recurring topic in fashion studies, discussed for example in terms of the structuring of bodies and embodiment (Entwistle, 2009), embodiment and sensorial experience (Belkaïd-Neri, 2020), and in terms of critical approaches to fashion, often with reference to designers, such as for example Rei Kawakubo of Comme de Garçons among others (Geczy & Karaminas, 2017). One strand of design-driven fashion research seeks to understand the relationships between garments and their wearers in terms of engagement (Valle-Norhona, 2019). This extends to design driven artistic research into the role of the transactional aesthetics in garment-custodian relationships (Falck Øien, 2022). Fashion and the body are inextricably linked; however, a full account of this topic is beyond the scope of this paper. We focus in the following on how the absence of human bodies signals resistance against current dominant modes of industrial fashion and its structuring systems. Relationships between garments and their custodians have gained a more central position in fashion studies. For example, in her study of experimental fashion design practice, Julia Valle-Norhona probes the relationships between the wearer and worn through investigative fashion design practice, stating (2019, 14), “In every (worn) garment lies a body, or more accurately, a plurality of bodies, either as a physical presence, or a tainted memory’. The role of the human body in fashion becomes evident once its physical presence is removed, or only referenced in fashion created for, and presented in gallery settings. In their unpacking of fashion shows as discursive spaces, Tiziana Ferrero-Regis and Marissa Lidquist (2021,14) frames the fashion shows as a non-homogenous discursive space that is “made up by intersections, departures and discontinuities within knowledge itself”. As they stress, discursive spaces are also the site for power struggles, and they frame the fashion show as a “microcosm where rules, and their disruptions, bodies, constructed forms, objects, clothing, practices and space come together to create a narrative” (Ibid). Anne-Sofie Hjemdal (2014, 110) refers to ‘the body’ as more than biological human bodies, encompassing various bodily representations such as dummies and mannequins. In fashion exhibitions, the body is thus “present in the concrete and tangible materiality the dressed figure represents”. The fashionable body is one example of a site for changing ideals in what is perceived beautiful or not (Skjulstad, 2018), and as a site for exertion of power (Craik, 1993). For example, the thin ideal is part of the



practice of fashion; “incorporated into habits, routines, objects and the bodies themselves of those who engage in it” and inscribed in the evolution of, the practice (Volonté 2017, 265). We approach emerging fashion work in the arts where the human body is absent in terms of boundary work that contribute to expand the register of fashion by the creation of free spaces for fashion as cultural expression beyond wear, utility, and consumption.

BOUNDARY WORK

The term *boundary work* was first coined by Gieryn (1983) in his study of how scientists worked to demarcate science from non-science or pseudoscience. This was an important activity to show their intellectual authority, furthering their careers and protecting their autonomy from for example political interference.

Boundary work as a concept refers to boundaries between individuals, groups, organizations. These boundaries are not absolute, but enacted and re-enacted – are dynamic and never fixed, requiring *work*. (Langley et al. 2019, 704) define boundary work as:

purposeful individual and collective effort to influence the social, symbolic, material and temporal boundaries, demarcations and distinctions affecting groups, occupations and organizations.

Koppman (2014) explored the struggle of legitimacy to define “creativity” and “good work” in the advertising industry. She found that through boundary work,

“[c]reative workers protect their position, within organizations and the field itself, by defining good work as “creative” and defending the perimeters of what constitutes a creative contribution against the competing claims of other professionals” (ibid: 2).

Her study shows how professionals can mobilize and align with parameters that help them position themselves advantageously in comparison to “others”. Indeed, boundary work often has a competitive aspect, where participants try to distinguish their work from others in the quest for some sort of advantage (Langley et al., 2019). As such, boundary work can affect the construction of one’s own, and others, perspectives, identity and credibility over time (Boland and Tenkasi, 1995, Lefsrud and Meyer, 2012). For example, in health care, specialized groups have applied different strategies and rhetoric to maintain and negotiate boundaries, resisting changes following developments in for example education and health care policy (Allen, 2000).

Langley et al. (2019) underlines how some stream of boundary work research has drawn inspiration from

social movement theory, for example the concepts of *free spaces* and *framing*. Free spaces refer to

“small-scale settings within a community or movement that are removed from the direct control of dominant groups, are voluntarily participated in, and generate the cultural challenge that precedes or accompanies political mobilization” (Polletta, 1999, 1).

These are conceptual spaces in social movements and counter cultures, that can be related to spread of ideas, frames, and the mobilization of resources (Ibid). Indeed, framing can also be important for certain types of boundary work, where framing is a discursive, strategic and contested activity in an ongoing dynamic process (Benford and Snow, 2000). Boundary work is especially important in fields where there are multiple frames at once, which boundaries needs to be kept apart, but also occasionally blurred in, “a stable condition of pluralism that allows for enduring differences to coexist” (Jones et al. 2012, 1540).

The concept of boundary work shows how differentiation and positioning relative to “others” requires ongoing work by those involved. Also, it requires occasionally blurring boundaries, “to signal their proximity to rather than distance from privileged others” (Langley et al. 2019, 713). Boundary work can as such be considered acts of framing. This ongoing work has social, symbolic, material, and temporal aspects, and is not simply about permanent structures/organization or discursive tactics.

With this in mind, we argue that boundary work as an analytical concept can be useful to shed light on how independent fashion designers might work to position themselves outside of the mainstream (and often problematic) notion of fashion, and blur boundaries of other fields such as art; perhaps looking for, and creating “free spaces” for alternative modes of fashion *within* the arts where fashion can be practiced as art. The next section presents our methods, before we dive into our empirical findings.

METHODS

The research presented in this paper was conducted between 2019 and 2022. The findings are informed by 11 semi-structured qualitative interviews with independent Norwegian fashion designers, whose work was acquired by the National Museum of Norway as part of their permanent collection of contemporary Norwegian fashion for the new museum that opened in 2022. In the interviews, designers reflected on their works’ position in Norwegian cultural life, as well as their own experiences in mediating their fashion practices digitally. In addition, the researchers followed the Norwegian independent fashion scene prior to- and

during the project period (including Covid lockdowns) via the designers' digital mediations, mainly on Instagram, and participated as audience at runway presentations and performances, in gallery- and museum spaces, at showrooms, temporary shop arrangements, and other fashion related events where the informants' work was presented. Here, the research material consists of short field notes as well as photographic documentation of these events, as well as exhibition documentation, websites, and Instagram posts.

INTENTIONALLY LEFT BEHIND: SIGNALLING ALTERNATIVE CONCEPTIONS OF "FASHION"

"When I say fashion, it is as if you need to be able to wear it." - Norwegian independent fashion designer

In this section, we present findings on Norwegian independent fashion that intentionally leave the space usually occupied by the human body blank in transitioning to the arts. This space signals that fashion design can transgress its current framings in carving out "free spaces" for articulations of fashion beyond utility and wear.

CONTEXTUALIZATION: ART AND/OR DESIGN?

Historically, fashion as an industrial system is rooted in the emergence of the Parisian fashion industry and characterised by the cyclical production and promotion of seasonal collections organized in what can be referred to as "industrial time" (Evans and Vaccari, 2020). Norway is by far a fashion capital in the traditional sense, located in the European periphery, without a vibrant textile industry, nor the cultural fashion heritage we find in countries like France and Italy (Falck Øien & Zanon, 2021, Skjulstad & Eritslund, 2022, Zanon, 2022). Norwegian contemporary fashion is broadly characterised by most fashion designers working for commercial ready-to-wear chains, or as textile artists (Ibid). Falck Øien and Zanon (2021, 260) states that a few fashion brands have tempted to hold a middle ground, and "operate across platforms, showing their work in art and fashion contexts alike— and eventually moved towards art".

Such fashion practices are positioned in the blurred space in between the world of art and the fashion industry. However, a position as 'middle ground' does not rightfully describe fashion practices that transgress prevailing demarcations between art, design, and craft (Skjulstad, 2022). When autonomous articulations of fashion enter the gallery space, the living human body tends to be left behind. Increasingly, these designers reposition their fashion practices in the arts (Zanon, 2022), extending in the process the register of fashion

modes one may encounter by making visible alternative approaches to fashion design (Skjulstad & Eritslund, 2022). Such alternative modes of fashion include works that are not meant to be worn by humans. As discussed by Adam Curtis (2022) in an article on Norwegian fashion practitioners who have detached from the fashion system, but also from city life, these moves signal a field in transition. Designers, such as the collective HAIK/w have for years used fashion design for artistic research (Bik Bandlien, 2016, Falck Øien & Zanon, 2021) into mechanisms of value creation in fashion that is all too often disclosed by actors in the fashion industry (Falck Øien, 2022). During the project, HAIK/w put their operation on hold, transitioning towards other modes of doing fashion beyond the creation of garments, as is the case with a range of Norwegian independent fashion designers whose practices are now tuned towards the arts, whilst rooted in fashion. Dilemmas arise in balancing different institutional contexts. For example, some designers experience that their work is read as either artwork or garment, and that these typically are treated as opposing categories. One informant tells us that:

"It is not "art" enough to get a scholarship, but then it is not "clothes" enough to get a salary. And what do you do then? I try to separate it a bit, because that's how society and the different institutions reads it. The art world does not read clothes as art, and if it becomes too artistic, people do not read it as 'garments'".

One designerly approach to this dilemma is to reference the scale of the human body in the mounting and presentation of textile works, inscribing the human form into the works, hinting at the possibility of a human wearer without fully including it. It is not the work's quality or relationship to the body that matters for one of the informants, but the artistic process behind its' realization. One of the informants regards the reading of the result mainly as a matter of context; When the work is in the gallery it is art:

"I see art as the context within which I choose to present my work, and then, it becomes art. It does not have anything to do with how advanced the garment is, or whether it is possible to wear it or not. It is about the context of presentation."

By showing the work in art context opens for different readings of it. As one informant puts it, "You gain all the institutional meta layers". These meta layers provided by art settings are important for independent fashion designers' transitioning from the fashion system to autonomous fashion practices in the arts. This enables the designers to expand the domain of fashion design and to generate new terrains for fashion outside of the



fashion system. One of the informants describes this transition in terms of having “withdrawn from fashion as a system”, with all its “rigid ways of doing things”. These ways of doing things involve scheduling seasonal collections, fashion weeks, keeping contact with buyers, creating promotional material, among other aspects of the fashion system. It can also provide the art scene with the immediate qualities of fashion, what one of the informants describe as a certain “shallowness” that a fashion context allows for, yet ones that hold potential for great experiences. However, just placing vernacular garments in a gallery without processes that motivate gallery exhibition is condoned: “The worst is a jumper, a scarf and a pair of trousers presented in a museum. It is like, are you kidding me?”

Fashion design for art contexts can be valuable to the field of fashion design, as it can prompt more reflection and justification of standards of the work, according to one of the informants:

“I just ask more questions when the work is to be presented in an art context, asking if can be justified, if it meets certain standards, etc. While in fashion, even very superficial choices can be OK, because you are allowed more.”

Some of the informants have attempted to be positioned in between the systems, but regard this as part of a transitional phase. Turning to the arts can be part of a discovery of design processes in fashion that have always been artistically driven, but unwillingly shaped by the fashion system. Withdrawal from the fashion system affects the practice in ways that enable the designer to do things differently. As stated by one of the informants:

“It affects the things I do, because I hope the context makes a difference. It encourages different readings the work.”

And indeed, the context matters in terms of value. It is difficult to make a living as an independent fashion designer in Norway, as fashion is not valued in the same way as art, as put by an informant:

“I don’t know, in music you pay for stuff, and you do that in the art world too. But as for garments, you can just lend them and sweat in them, and give them back. I’m sick of that.”

The informants point out how garments are ascribed significantly less value in contrast to other cultural expressions. Fashion that is presented in museum settings can have strong ties to the fashion industry, exemplified by major fashion exhibitions that focus on major fashion houses that predominantly are run as businesses. This have generated heated debates on the role of museums as vehicles for cultural credibility (Steele 2008, 2012). The spatiotemporal arrangements

of museum and art gallery fashion exhibitions differ from those of runway presentations. Presenting fashion on human models in gallery contexts over time presents practical and ethical considerations. For example, the Norwegian artist and fashion designer Admir Batlak have presented works worn by human models in prolonged fashion performances at Gallery Riis, Oslo Norway, and more recently, works where the human body is absent at Soft Gallery, Oslo, Norway. In transitioning from the fashion system, the human body is left behind. A series of works by Anne Karine Thorbjørnsen, *Skulpturvandring langs Glomma* (Sculpture walk along Glomma) (2022) was for installed outdoors in the natural environment, in the rural area of Elverum, Norway. The sculptural “garments” and “bodies” were subjected to the elements of seasonal change, “worn” by “bodies” that endured the forces of nature for a prolonged period, one beyond the conditions of the runway show, or gallery space, subjected to seasonal change governed by planetary movement, not the fashion calendar, or opening hours.



Figure.1 Anne Karine Thorbjørnsen, 2022, *Skulpturvandring langs Glomma*, Elverum, Norway. Photo: Anne Karine Thorbjørnsen.

While the temporalities of nature differ from that of a gallery exhibition or the brief duration of a runway presentation, one informant contrasts the vibrant energy in fashion to the art context:

“I don’t know. What I like about fashion is perhaps...I like the speed, that you are always hungry for new visual expressions. I feel that practitioners in the art scene are lazier in the pursuit of one’s own thing over much longer time. In fashion, that is, the best designers they don’t rest like that. One is always curious to see what direction their work is going.”

A nod to notions of “industrial time” is present in the work of Tonje Plur, (Figures 2 & 3), whose exhibition at Tekstilindustrimuseet (the Textile industry museum) in Salhus, Bergen, Norway in 2022 is given the title SS23.



Figures 2 & 3: Tonje Plur, *SS23*, Installation view, Textile Museum of Salhus. Photos: Tonje Plur

In removing the physical human body whilst still alluding to it through body-like references and proportions, these decentred fashion works raise questions about how humans relate to garments, artworks, and about fashion as a system in transition. These form decentred expressions of fashion as described by Vänskä (2018) that may tell us something about being human and about novel approaches to fashion.

Interviewed by Adam Curtis (2022), fashion designer Harald Lunde Helgesen, describes his fashion practice as a:

“‘new design way of being’ with a goal of defining the ‘non-commercial designer who does not have to abide by the rules of the craft organisations or the fine arts organisations – you fall between the chairs. But between the chairs is also a place – instead of trying to escape from between, you have to build a chair there.’”

Fashion designers that reposition their work in the arts build their own “chairs” through works that probe novel modes of fashion practice. In this process the works’ relationship to human bodies and their potential value are transformed in the process. As stated by fashion scholar Joanne Entwistle (2000:9), “The importance of the body to dress is such that encounters with dress divorced from the body are strangely alienating”.

This points to the human body as a site for negotiations on the status of a garment, one that changes according to its context of presentation. According to one of the designers who took part in the study, it is the human body that links the garment to consumer culture and renders it as a product, resulting in a decrease of value:

“I notice that once a work is worn on the body, its value decreases significantly. Because then, it suddenly becomes an item of utility, something you expect will be broken, something disposable. That is the general mindset of many people, that it is not worth spending much money on something that will be gone. Because then it is suddenly just clothes, and as if it ceases to be art.”



Figure 4: Anne Karine Thorbjørnsen, *Drapery Studies*, Photo: Tove Sivertsen

For example, the previously mentioned Tonje Plur's exhibition SS23 consists of a series of "impossible garments" not created for being worn by a human body, except in the exhibition visitors' imagination. The works are presented as ensembles of human scale, ones where it is possible to imagine the warmth of being wrapped in the soft knitted textiles. Works by fashion practitioners in the arts, such as Admir Batlak and Anne Karine Thorbjørnsen are similarly "impossible" and presented without the human body. These practitioners have transitioned from the fashion system to the arts and create and present works that are not intended for human wear.

As impossible garments, they can be treated with reverence, as the human body alters worn garments through staining, odours, ripping, stretching etc. The body thus emerges as a site of demarcation between the domains. Works that embody a wide array of tacit and material knowledge and technique that stems from

fashion design are put to work that extends prevailing ideas of fashion. In evading utility, these works are not created for absorption of cultural credibility for marketing purposes; They demonstrate an extension of the modes of fashion we may encounter within a system of artistic value as opposed to in contexts where fashion is rendered in terms of consumable products.

In fashion design practices within the arts the absence of bodies illuminates a space intentionally left blank that form sites for processes of demarcation between autonomous fashion practices and those of the dominant industrial fashion system. These works demonstrate that fashion can exist beyond the fashion system. The space usually occupied by human bodies leave space for reflection on the problematic relationship between fashion, the body, and between fashion practitioners and the fashion industry. The abovementioned examples are all selected from the Norwegian context. In 2020, Ane Lynge-Jorlén and Pernille Stockmarr curated the fashion exhibition *Absent Bodies* for Design Museum, Copenhagen, Denmark. The title reflects how human bodies were intentionally left out in the exhibited works¹. The exhibition was a comment on fashion's relationship to the body. In leaving it out, the close relationship between fashion and the body appeared as a site of reflection on fashion as cultural expression.

CONCLUSIVE DISCUSSION

The previous section presented some of our findings related to fashion practices in the arts. The absent human body in contemporary Norwegian independent fashion work make visible how fashion practitioners contribute to the creation of new free spaces for fashion design in the arts, and the need for acknowledging fashion practices that collapse, or blur existing demarcations between the two domains. This in contrast to an endless circle of parallelisms, where fashion is rendered as an emulation of art (Pecorari, 2013). As argued by de Vries (2022, 37), if leaving the term fashion behind altogether, as one that is smothered, an unintended side effect "is the simultaneous degradation of fashion; subsequently, fashion is rarely invested with a true critical and noteworthy perspective".

Boundary work can be the purposeful effort to influence the boundaries and demarcations between fields (Langeley et al. 2019) and result in productive exchanges and dialogues across binary divisions creating new discursive zones for fashion design as an artistic mode of expression in the arts. When we

¹ See the exhibition website, <https://fashionexhibitionmaking.arts.ac.uk/absent-bodies/>

characterize efforts by independent fashion designers who transition to the art world as engaged in boundary work, they carve out “free spaces” (Poletta, 1999) and expand the current modes for practicing fashion. In these efforts such alternative fashion practices may avoid many deeply problematic aspects of the fashion industry. Through boundary work the designers demonstrate how their sensibility, skill and capability acquired from fashion are put to work for alternative modes of fashion that is positioned out of reach for being “used and abused” and devalued as “just clothes”.

Indeed, leaving the body behind frees the work from fashion’s industrial time, allowing other forms of fashion encounters within and beyond the temporal and special boundaries of the gallery as opposed to succumbing to the fashion calendar. By gaining a position within the gallery beyond “pants in the museum”, this new understanding of fashion expands its boundaries. As argued by Entwistle (2000, 3), it is important to acknowledge the connections between “production and consumption, considering the relationship between different agencies, institutions, individuals and practices”. She stresses the need to connect fashion to everyday dress, as fashion “is an important determinant on everyday dress but fashion becomes widely recognized only when it is translated into dress on part of individuals” (Ibid).

However, the garments are not “pure art”, as independent designers root their designs in what may be transferable to human form and scale and to mainstream fashion, such as the creative drive and the lack of rules. As such, boundaries between art and fashion are kept apart, but also blurred (Jones et al. 2012, 1540). In this new space, a new type of legitimacy, ability for reflection, and potentially new sources of funding resides. In the emerging free space with its own boundaries in relation to fashion and art, independent designers have left the body – at least in its material form in processes of releasing fashion from commodity status and its structuring systems and “rigid ways of doing things”. This offers a new way of understanding the relationship between art and fashion, and the way independent designers work to give themselves new conditions for practicing their profession autonomously. Further, it also illuminates how boundary work can mean removing what traditionally may seem to be the core of one’s profession in order to move into new and perhaps more promising areas, both on a personal and professional level.

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Practices] — [Bodies



TEACHING DESIGN FOR SUSTAINABILITY FROM THE CLASSROOM: UNCOMFORTABLE REFLECTIONS FROM A COMFORTABLE PLACE

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ABSTRACT

The paper describes co-teaching on a masters programme with design for sustainability at its core. The programme puts emphasis on involving multiple societal stakeholders but increasingly also on appreciating the often tricky social and value-laden dimensions of designing better futures. In this context, we seek to foster students' imagination and support their utopian thought and futures-oriented design. The classroom experience shows that this is achievable through rather conventional academic practices, ones rooted in disciplinary insight and empirical and historical research. The paper also suggests that enhancing students' self-critical understanding of their own situatedness, even their own comforts, by grounding both teaching and speculation historically, supports their impulse to be simultaneously bold and realistic. It also tempers the tendency in design research to offer "we should" as research outcome. The contents of both "we" and "should" can be left empty, but more is gained by being clear about the implications.

INTRODUCTION

This paper is about teaching design with sustainability in mind. By any definition, design has many virtues that can be at odds with key attributes of modern

scholarship. Design is not constrained, for instance, by centuries of authorising institutions, whether intellectual (paradigms and protocols) or institutional (professional accreditation bodies). Whilst such discipline-busting qualities are typically considered useful in research oriented towards sustainability, they are also qualities that can make design research prone to naïve (or instrumental) hype about this. Better to acknowledge that "design will not save us" even if it has "radically expanded the socio-technical field of political struggle" (White 2020, 32). Having developed from its beginnings as a discipline in-between or both – material-semiotic, art-science, user-entrepreneur, technical-normative, practical-conceptual, and so on – how it manifests has more to do with context and point of view than with any intrinsic property of anything we might label design. Similarly futures research, which we also build on in our teaching, is a young and contested field of academic enquiry, yet equally necessary in as complex, complicated and vulnerable world as ours (Son 2015).

Combining futures with design might seem like grounds for jettisoning history and historicity, particularly given that ubiquitous crisis is shaping design for sustainability and politics alike (Bulkeley 2019). At a time when the future and experiment are so prominent, the classroom and its ancient virtues may seem outdated. This paper argues against that grain that universities remain crucial to enabling feasible collective futures. There collective actors come to recognise themselves as such and there they can pursue important conversations, jointly oriented towards innovation as well as continuity. As the environmental writer Bill McKibben notes, "a college is where society thinks about itself" (McKibben, cited in Death 2019: 45).



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In this paper I¹ report on several years of experience in the classroom, co-teaching two courses as part of the Creative Sustainability Master's Programme (CS) at Aalto University in Helsinki.² The programme, with a history going back over 10 years, bolsters students' confidence in the emerging professional fields of sustainable design, planning and business, as well as subfields of environmental engineering. All these fields enjoy socio-political legitimacy but they also routinely face practical as well as conceptual challenges. I want to emphasise here that the classroom remains important in offering the depth of imagination and the breadth of knowledge that can help students in their quest to be better designers for sustainability, capable of applying their understanding in real world situations (Micklethwaite 2022). The paper also suggests that enhancing a self-critical understanding of situatedness, which we do through repeated historical and material grounding, supports students' impulse to be simultaneously bold and realistic. The argument could be extended to design studies and design research (Tonkinwise 2014, Fisher and Gamman 2019, Prenderville and Korja 2022), but this paper limits itself to our master's level teaching.

Above all, our students want change. Yet today's technoscience-intensive environment makes substantial demands of anybody seeking change. And whilst projecting into the future through speculation is core to both design and futures work, when it is grounded in disciplinary understandings of where, collectively, we are, the power and creativity of such projections can be amplified. Historical understanding helps expand the imagination and it strengthens project work. Once "we" is at least roughly specified, it is possible and rather straightforward to build on the history of design, through examples, to demonstrate that and how design is embedded within the environment. Such an exercise also contributes to sensitising ourselves, over and over again, to the situatedness of our endeavours. Thus, rather than relying on an abstract notion of humanity striving together towards an assumed but vague goal of "sustainability", the courses encourage a strong sense of situatedness. How "we" is defined and how it comes to inform learning emerges as part of the academic grounding but will be formative, we hope, of future design practice.

This is particularly important in a domain like design for sustainability, which has a tendency to we-should-ism, the exhortation to join a morally laden and seemingly self-evidently laudable project. On academic forums sustainable design can focus too much on how

this, that and the other should be done differently at the cost of understanding how things actually are. (Examples abound – and need not be cited – but see Kohtala (2018) for a wonderful practical guide for identifying and dealing with aspects of the problem). Sustainability-oriented we-shouldism may contribute to a very justified critique of One-World-World-ism (Escobar 2017) (to which I return below) or UN-environment-speak. Although the language of planetary boundaries and global problems offers shared co-ordinates for discussion and aspirations, it can also depoliticise what are highly political decisions, just as the initially quite radical idea of the Anthropocene can (Barca 2020). Repeating "we should", particularly in the abstract ways typical of global environmental discourse (Wapner 2021), can and does contribute to a widespread tendency of morally heavy but politically weak panic-mongering. This has a poor track-record and is disempowering. For instance, despite continuous engagement with climate change, and a proliferation of efforts at all levels of government, the problems continue to pile up (Stoddard et al. 2021, 655). Still, the pattern is typical right across the domains of sustainability, not just design.

In the rest of this paper I describe the courses and our teaching approach, specifying if my comments relate to one of the two courses specifically or to both. I discuss the need for a critical, academic, understandings of how design shapes – and doesn't shape – tomorrow's world. I conclude with thoughts on how design education, practice and perhaps even research, might make impact differently if the limitations of design, but also the complex legacy of modern science and the technologically dense social realities of today, were approached more historically. I further propose that this might involve uncomfortable reflections on a space too often left blank in design research and pedagogy: the question of who "we" are.

CONTEXT AND APPROACH

Since 2018 I have been teaching broadly design for sustainability related content together with İdil Gaziulusoy. As teachers we have very different skills, but we both have backgrounds in environmental sustainability. I defended a doctoral thesis at a British social anthropology department on middle-class environmentalism. This research led to drawing on STS and environmental history and later, to an interest in design. My research and teaching nevertheless remain rooted in the empirically grounded and

¹ The paper has one author, but my colleague and co-teacher İdil Gaziulusoy has contributed hugely to its findings, insights and even origins, which mean that most likely some wording is probably hers. A big thank you, for all of it!

² <https://www.aalto.fi/en/study-options/creative-sustainability-master-of-arts-art-and-design>



comparative legacy of the social sciences and its efforts to appreciate human possibility. İdil Gaziulusoy is a sustainability scientist and design researcher who has been integrating the two fields to contribute into the body of action-oriented research addressing transformations to sustainable futures (Gaziulusoy & Erdoğan Öztekin 2019). She also has experience of futures work beyond academia.

We created the new courses we discuss because we wanted more appreciation and exploration in the curriculum of the Creative Sustainability masters programme, of the consequences of designing. We felt this was intellectually as well as psychologically fundamental on a Master's program training young people to address environmental problems. Both seek to develop a critical sensibility to designing in the context of an urgent sustainability imperative.

In our multidisciplinary environment the students choose from several available "tracks", with design being only one (currently alongside chemical engineering and business). The courses are taught under the responsibility of the departments, but open to students from across the programme. The timetable not allowing for an extended single course, we now teach two, Values in Design Futures and Sustainability Transitions and Futures, where the first works as a (one of several) prerequisite for the second.

The interdisciplinary lecture and seminar course, Values in Design Futures, explores discourses and practices regarding futures and societal change. Its premise is that design has always been profoundly engaged in shaping society through ideas and visions of the future. Today, as method and practice, it is increasingly used to imagine, explore, communicate and steer change. In so doing, design involves judgements about what is desirable and for whom, it requires working in contexts of potentially conflicting values and surfacing potentially salient issues around change-making. The course prepares students to be more sensitive to the values, ethics and politics of design by pointing to such frontiers in design.

The Sustainability Transitions and Futures course, ideally taken after the Values course, builds on theories and practices of socio-technical and socio-ecological transformations for sustainability. These include theories of transition management, resilience and social practice, typologies and processes of sustainability transformations at different scales, as well as methods of futures and participatory inquiry in the context of sustainability transitions. The students work on developing strategies for sustainable (socially, ecologically and economically resilient) and just futures through analysis of a given transition situation. Students develop a project outline as a group and reflect on the roles and expected inputs of the relevant actors (architects, urban planners, designers,

researchers, policy makers, public, private and civil society actors, etc.) in context.

Both courses support the wider aim in the curriculum to nurture creativity. However, although Aalto celebrates creativity, it is also under pressure to operate as a limiting and privilege-upholding, conservative space, easily marshalled to promote business values and Finland's export industries. Besides, exploratory knowledge production and alternative future making are growth industries. In the CS programme, they may – but may not – help to chip away at the timidity of current policy and business circles, who have been working on the expectation that the future will be much like today only with new gadgets, a "simple extension of today" (Stoddard et al. 2021, 659).

If visions of the future animate political life as never before, dominant narratives highlight innovation as a technical practice and imperative, making staring into the future a popular sport. We emphasise that design has always been profoundly engaged in shaping society, even if its historicity is easily forgotten (Tonkinwise 2014, Mazé 2019). As regards environmental, green or sustainability-oriented inventions and programmes of improvement, despite initial appearances as self-evidently virtuous and desirable, many produce widespread damage. All such projects have complex political impacts and often unspoken moral norms built into them. Thus we work with a broad understanding of design as a practice of constantly working and reworking socio-material realities.

Design is to some extent always an exercise in alternative future-making. To quote anthropologist of design Keith Murphy (in George Marcus 2021, p. 97)

"Design is always, even its smallest details, interventionist in ways that constitute the very discipline itself. And this is a condition whose implications most design disciplines, and most designers, don't spend much time worrying about; because intervening is just what they do" (p. 109).

To "just do" something is not, we emphasize, free of theory let alone values, and so we seek to help students stop to think: what are, or would we like to be, doing? And, of course, who is the we? Maybe also, who are we to be doing this? Engaging with such questions requires understanding design, like all human action, as contingent, contextual, ambiguous and nuanced and even tricky (Fisher and Gamman 2019), and always situated. At one level, and at certain stages of the student experience, to acknowledge this simply serves to complicate things and open them up to critique.

SITUATIONS AND RELATIONS

Creative fiction and other exercises for the imagination have a prominent place in our pedagogy. Fiction is a way to “craft specific relations and situations” (Wangel 2021, 172), and offers a productive analogy between design and writing. And so we deem it absolutely necessary to engage with science- and other fictions, with visualisations, and to discuss the imagination and imaginaries (Jasanoff 2015). We build on the well-known futures cone, but also on the idea that futures should be preposterous (beyond the merely projected, possible, preferable, etc. of the futures cone) in order to be challenging (Voros 2017). In recent years we have started with an exercise, ‘The first five minutes of the future’, (Institute for the Future 2020) where students get to experience the simultaneously cognitive and affective aspects of futures thinking, but also appreciate the sometimes considerable differences in their own thinking, and how these differences are conditioned by their personal, socially and materially mediated, histories. Those for whom failures of government are routine, imagine difficult scenarios and their causes in quite contrasting ways from those, like most Nordic students who have been lucky enough to be brought up to trust governments and “the authorities” to manage socio-technical systems. The exercise also points immediately to the significance of affective response and social context, concerns that fiction is generally better equipped to acknowledge and explore than non-fiction.

On the Values course I consistently highlight the work that has gone into embedding designs that we take for granted. I foreground the legacy of a broadly unsustainable design culture (Julier, forthcoming) as something that shapes our material conditions and technical capacities, as well as our moral and other values. On the course we also zoom in and out of the different meanings of the word value itself, and try to be analytical and rigorous about it (e.g. den Ouden 2012). This also involves unpacking and complicating the idea of value – an inherently relational concept – as ever truly “objective”.

As climate fiction and its growing popularity suggests, the imagination is a powerful tool in uncertain times, but its power is not limited to conditions of flux. Rather fiction, in narrative, film, pictures and so on, can link environmental (or any significant) change tightly to personal experience. Sense-making happens gradually, as a newly met protagonist and their strange surroundings unfold in relation with each other. Potentially even the most incurious of readers or viewers will shift their own perspective. Specifically, reflecting on the 1909 short story, *The Machine Stops*, by E.M. Forster, has allowed students to develop complex analyses that combine critical as well as

empathic insights into past dystopian futures as well as our own contemporary challenges. The story’s sad events – its life of isolation and technological dependency poignant during the pandemic – allow students to identify politics and context-specific values as necessary to living life as humans rather than as invitations to judge the situation as ‘good’ or ‘bad’, or the author as a technophobe or worse.

Imagination is called for also when students ideate and create their own visualisations (of sustainable futures for places they know well, for example). However, imagination is also called for as well as developed in the thinking through history³ of the courses. We discuss, through examples to hand as well as ones found in literature, the fact that the industrial revolution was not merely a question of technical and business innovation, but a revolution in desires and aspirations. In terms of world building, we can analyse this with the language of sociotechnical systems and transitions, of social practice, but also of sociotechnical imaginaries (Jasanoff 2015). Ruth Schwartz Cowan’s (1976) text, ‘The Industrial Revolution in the Home’ appears to be an eye-opener, as are other histories of modern life that foreground gender, class, race and other differences that make a difference.

Our approach is not just historically but territorially grounded, requiring students to envision futures for a specific site, for example the university campus itself. Yet both courses are fundamentally rooted in academic research, the work on both courses aiming to link this to personal and collective experience, and to the multiple crises impacting it. This means engaging with and developing the skills to practice academic research, whilst simultaneously critiquing it as an institution. Such engagement, can (at least) be fun and exciting, but it can lead to exploring with the students whether or not research we can rely upon has been carried out on the issues that are important to us, and if not, why not. To wit: “If relevance rather than authority or objectivity had been the name of the game, the sciences would have meant adventure, not conquest” (Stengers 2018, 144).

On the Values course, which is based considerably on historical examples and social science-oriented research, students survey ways that directional change and intentional world-making have unfolded in the past, from state-level planning to marginal intentional communities like eco-villages. They also learn concepts for comparing and exploring how these projects, whether deemed industrial, political, protest-driven or whatever, have been reflected upon by contemporary observers. On the Sustainability Transitions course, built around a place-based group

³ With thanks to a reviewer for this helpful synthesis.



project, visiting lectures offer glimpses of relevant academic input into the sustainability problem at hand. The readings on both courses come from academic journals and text books, and are written and researched by members of the academic community in general, from various discipline and often eclectic sources. This may amount to something that critics of anthropology once called “butterfly collecting”, anecdote upon anecdote on the creativity and wonderfulness of humanity, unwittingly flattening out and exploiting (colonising) other worlds for selfish ends. I reject such an interpretation.

Whether in teaching, research or practice, neither science-bashing nor techno-hubris will suffice. Rather, the sustainability and other crises that impinge on collective life require first, the re-civilizing of the academy that philosopher and historian of science Isabelle Stengers calls for. It demands that modern science and scholarship remain on the table but in a more defensible form than its current “debasement” as she calls it. Locally meaningful and transdisciplinary cognitive effort is also crucial, but in tune with the real-world focussed heritage of STS, whose force and relevance come not only from abstraction, but also from the concrete ways that knowing becomes meaningful. This may, or it may not, depart from what official versions of science deem important (Stengers 2018, 143). In our context of a situated but planetary sensibility, such locally relevant nuance is crucial and we keep returning to its specificity in the classroom.

DESIGN AND INTELLECTUAL WORK

Similar ambitions are reported from across the educational spectrum of design for sustainability. Writing about the last ten years of a master’s programme at Kingston, London, Paul Micklethwaite (2021) emphasises sustainability literacy but also the significance of engaging narratives. Damien White’s (2020) historical overview of design for sustainability reaches back to the 1880s and William Morris, whilst also recognizing the considerable work that is so easily overlooked but now being made available for study as “hidden histories” of Indigenous, African American or other design practices of political minorities. Literature extending design ever further out from industrial arenas is growing apace, providing a wealth of case studies and, with them, a new understanding of how limited have been conventional views of design but also of the modern civilization and notionally western, industrial, lifestyles with which design has been associated, and from which most impulses to make it more sustainable (and these western-style lives less unsustainable) emerge.

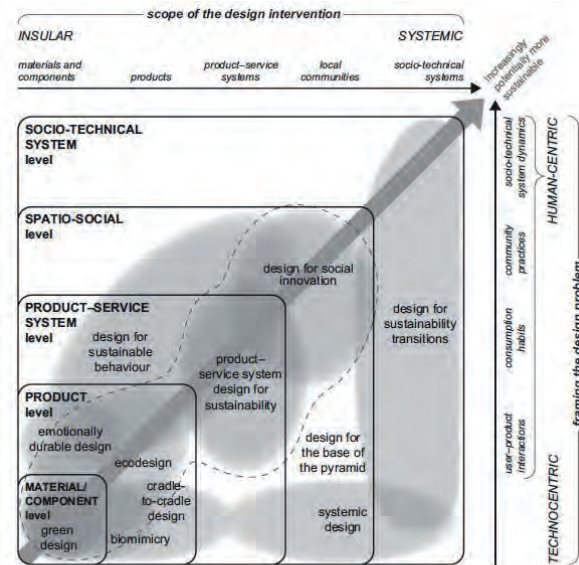


Figure 12.3 The DfS innovation framework with the DfS approaches mapped onto it

Fig. 1: Ceschin, F. & Gaziulusoy, İ. (2019) ‘DfS innovation framework’ in *Design for Sustainability (Open Access): A Multi-level Framework from Products to Socio-technical Systems*. Routledge.

Abstracting discourses, as I noted, can be a problem for sustainability, but they are necessary to make sense of a dynamic world. Similarly thinking in terms of systems may be criticised for its simplifications, but is equally necessary for learning. Ceschin and Gaziulusoy’s (2019) Design for Sustainability innovation framework, summarised in the image above, shows that innovation is generally materialised in ways that embed it in wider systems: products within product-service-systems, community initiatives within wider socio-technical systems, and so on. This foregrounds the limitations of design interventions, but also identifies potential spaces for shifting away from unsustainability or transitioning towards sustainability. The framework allows for comparative understandings of how and where interventions towards more sustainable practices are likely to have traction.

Ceschin and Gaziulusoy’s framework highlights change over time - history again – and it shows how the scope of design interventions for sustainability has broadened in focus. Designers need to be equipped with ever growing knowledge and competencies because over time design has been drawn away from working on the narrowly technical and being centred on individuals to broadly socio-technical and collective work. At the same time, the world at least appears ever more complex. This means that to understand it only transdisciplinary collaboration including requires (however defined) stakeholders – e.g. manufacturers, users, policymakers, advocacy networks. Inevitably, stakeholders will bring with them a range of values and desires that will contradict if not come into conflict

with each other. Our pedagogical aims include nurturing the capacity to cope with discomforts that this is likely to create.

Concrete examples of design show it always already as both material and conceptual, always full of negotiation. Its ambiguities and messy aspects become apparent sooner rather than later. We seek to give students space for and practice in simply appreciating the tricky ethical and political terrain involved. For instance, the easily uttered exhortations for “humanity” to “listen to the science” can be complicated by noting how changing, hesitant and even internally contradictory have been scientifically backed projects of sustainable technology, not to mention how situated are people’s abilities or indeed willingness, to value products or practices presented in the abstract, as “more sustainable”. In contrast, when they work on a situation they have a stake in, and can reach a joint understanding of the shortcomings of the present, the weight of the past as well as the pull of the future, the drive to compromise – and to accept compromise – may be enhanced.

Both courses thus build on speculative and critical design that problematise the idea that design is about producing solutions to problems (Wangel and Fauré 2021). My own sense is that students are truly expanding design out into political terrain but without, becoming overly constrained by this realisation. My wishful huch is that they may even be rethinking what design could and should be in the 21st century.

Both courses, of course, are about global and planetary phenomena. Scientific understanding is fundamental here, but again, the history of design turns out to be more significant than is often noticed. We live in a world where pretty much everything, including things considered natural, shows traces of having been designed, and much of what we do to create change and improvement is about fixing problems created by previous technologies and designs (Mitcham 1997, Berglund 2019, Julier, forthcoming).

We have found the concept of the Anthropocene, particularly the patchy Anthropocene (Tsing et al. 2019), useful in highlighting the unintended consequences of former designers or designs.- without, as yet, having come to more than intuitions. When *Feral Atlas* (Tsing et al. 2020), the exploration of the dynamics and impacts of humanly created infrastructures was published online in 2020, it added to our toolkit of accessible (in several senses) and helpful scholarly guidance for making sense of the complex phenomena that the idea of the Anthropocene seeks to capture. Although not an explicit approach for us, we endorse the following constructive

characterisation of the intellectual work needed to make sense of Anthropocene conditions from one the Atlas’s introductory essays:

“*Feral Atlas* mobilizes an intellectual commons, that is, a set of approaches to the Anthropocene in which heterogeneity and open-endedness are essential characteristics. This commons is neither bounded nor exclusive; differences— across continents and regions, across disciplines, across ontologies, and across forms of access and privilege—are key. And yet, taken together, the reports and stories in *Feral Atlas* urge a collective shift in how we make sense of the world.” (Tsing et al. 2020)

Our teaching also respects scientific heritage but adopts a historicised perspective on science itself as situated yet utterly necessary to dwelling in technological worlds. A wealth of inspiring materials is available online, for example in the science fiction published by the journal *Nature*, and the reflections on such work in publications closer to the social science humanities, e.g. Davoudi and Machen (2021) recently used on the Values course.⁴

With such materials at our disposal, it is not so hard to complicate, at least, the heritage of modern technical and engineering practice, and its associations with “hardness” and with realism and rationality. With them, we can push against futures work that involves only a thin understanding of social (and thus socio-technical) change and human experience.

DISCUSSION

The academic work that we incorporate into teaching comes from many sources, only some of it directly from our own research. We aim for classroom content that teaches us about the world out there, and that heightens our capacity to notice and learn. This curiosity-driven approach also alerts us to how peculiar we ourselves are. For example, it helps to understand that there are good reasons why not everyone thinks or acts as we (however defined) do ourselves. A key resource then is research in the humanities and social sciences, that showcases the incredible histories and endless ways of being human. Of particular interest, of course and a resource for imagining, are accounts of human life beyond the presumed universality of the modern west, not just in science fiction but in social fact.

In this endeavour, social reserch of different kinds, but maybe anthropology particularly, shows just how diverse human existence is and has been: We think that

⁴ With thanks to Nina Janasik of the University of Helsinki.



X is natural, but have a look at the Y, they do this natural thing like this!

Particularly in a context of halting but impactful decolonising of knowledge (Whyte 2018), a critical sensibility might, however, suggest that this kind of simplified ethnological comparing will inevitably and damagingly lead to exoticisation or worse. And yet, to quote from a well-cited survey of the failures of climate politics (Stoddard et al. 2021), in projecting into the future my co-teacher and I do want to align with the “indigenous and decolonial traditions of thought” that “are already a powerful critique of education’s role in reproducing and defending the status quo. Critical futures studies, anticipation studies, and analysis unpicking deeply colonial framings of histories, social practices, and beliefs are all challenging the over-reliance on modelling in generating accounts of the future” (Stoddard et al. 2021, 676). Ingredients for this can be found in anthropological classics like Marshall Sahlins’ *Stone Age Economics* from 1974, with its accounts of people who work little but stay healthy and happy nonetheless, or in the recent cult book, David Wengrow and David Graeber’s *The Dawn of Everything* (2021), which upturns the story of European enlightenment: it gives less credit to dead white men than to the dead American (ancestors of those now labelled indigenous or native) people with whom, as it turns out, those now-biologically-dead Europeans engaged in as they broadcast their own politics.

Fortunately the Department of Design at Aalto has a research culture that is open to such broad critique. Although the arts may be better known as indulging a certain navel-gazing, there is, we intuit, a willingness for critical and self-critical exploration of where we are and who we are. Design for sustainability education particularly needs to keep in view the situatedness – and the patchiness – of any endeavours that might alter or somehow compromise the comforts and freedoms that are currently taken for granted by most of the university community.

What is particularly relevant for sustainability is that “we” are at least partly a community of downshifters. That makes a difference to how we can expect our designs for sustainability to have traction and leverage, making it possible to wax romantic about, for instance, giving up comforts or resources. Besides in the economics of the “we”, there is cultural specificity, indeed strangeness, in our science. This goes beyond technical and scientific disagreement and beyond resorting to the typical but misleading binary of “subjective opinion” clearly distinguished from “objective fact” that so many students – and staff – easily resort to. Following STS, the power of science is not diminished by recognising its historical roots and current dynamics, and its imbrication not only in matters of fact but in matters of concern and value. After all, to quote historian of science Lorraine Daston,

“the history of objectivity is an intellectual and a social history, but it is a moral history as well” (1992, 614).

As a university and a programme, we can situate ourselves self-reflexively and reasonably precisely, if we want to, in this broader history. This alerts us to its moral as well as intellectual impulses. Since being established, the programme has nurtured a tendency that Damien White has characterised (along with other programmes) as being underpinned by “a common understanding that the fields of design, social practice and design for social innovation must explicitly push back against neoliberal design and managerial and corporate visions of ‘design thinking’, and be comprehensive, restructured, politicized and mobilized to argument all manner of interventions concerned with transition to post-carbon societies” (White 2020, 31). The normative, indeed moral, impetus is to the fore.

Arguably as a dedicated masters on sustainability the CS programme is succeeding relatively well to maintain its edge and edginess, as it competes (for students) against a plethora of well branded international programmes, now that sustainability(-as-usual) education is gaining popularity. We explicitly try to stay present to the realities and pains of achieving something beyond-sustainability-as-usual. Whatever the ranking, we do draw in a very special bunch of young people who are disillusioned about sustainability-as-usual too. Perhaps this also nurtures self critique.

Like the examples of sustainability interventions on the courses, this aim points back to situatedness. For the programme draws a cosmopolitan student body but with a grounding in largely European and USA-based academic work. Many students critically identify this problematic legacy as a One World World (Escobar 2017) way of thinking, reductionist or colonial, tunnel vision or whatever, but in any case rooted in the specifics of Western hegemony and supporting the fiction that “the global” equals “universal”. This One World World leaves no real choices, just as the non-historical conception of history blinds scientists to alternative possibilities and definitions of relevance (Stengers 2018). For whether it is the demands of the climate or of the economy, the imperatives that guide policy and morality appear unassailable. Yet they are systematically uttered from a position – “our” position – of systemic unsustainability.

In analysing this uncomfortable situation, students often articulate eloquent critiques of neoliberalism, often particularly harsh on that aspect of it that appears to reduce the value of information and even knowledge to a market-based epistemology (“the market knows best” or “it’s the economy, stupid” or the famous TINA doctrine, “there is no alternative”). But they can also appear to get caught in tropes akin to collective self-flagellation or they indulge in rhetoric that denigrates western science and other core institutions that actually

shape our lives and identities. This is *needlessly* uncomfortable and debilitating.

Taking a broader view, the predominantly comfortable context of the Aalto campus regardless of whatever social, cultural or individual qualities people have, we all somehow value and benefit in some way from the legacy of western hegemony that, correctly, students identify as problematic from a sustainability point of view. We are a community – loose but real. This also sets the tone of our joint learning. From global South as well as North, with diverse academic and social and even generational experiences, we all want to design for sustainability. As designers of better futures, in the classroom at least we belong to a “comfortable slot”.

This idea comes from anthropological debate about what “slot” the discipline studies (Trouillot 1991) – the savage, the suffering, the super-rich, etc. – and whether any such study can or should proceed without exoticisation. I develop in relation to the mundane but politically significant everyday lives of middle-class citizens who engage in currently popular forms of design activism (Berglund 2019).

Given the context of extremely normative and, in its own way, falsely universalising, notion of sustainability and design for sustainability, it matters that we are teaching in this comfortable slot. This is not just a generic global North, though the slot is easy to find here, but a subject position from where striving for sustainability is simultaneously normal, cynical and often extraordinarily difficult. It is, after all, almost impossible to live a sustainable life, defined in material throughput terms, in the Nordics – unless one is homeless, that is. And yet it is from this very same comfortable (but unsustainable) slot, from which so many environmentalists and sustainable designers exhort people to relinquish their driving, flying, steak-eating and other cherished habits and then wonder why their appeals fall on deaf and even hostile ears.

The idea of the comfortable slot is useful for learning and quite easy to define and situate, if the intention is to highlight an important but easily overlooked feature of design for betterment: it often emerges from places where the improvement on offer (a sustainable solution) can be imagined as widely desirable (even imperative) and achievable at a cost that any reasonable person would deem worth paying for. This position sidesteps the inconvenient truth, that reasonableness comes together with other sentiments and comforts that are not universally shared. Nor, quite often, are the claims to sustainability uttered from that position even hard to refute.

That sustainability in general and sustainable design in particular are contested is illustrated by a lively issue in the transition politics around campus: the sustainable-because-electrified SUV. Researchers argue passionately about many aspects of the electrification of transport, but public debate is muted, demonstrating

nicely that what is presented as sustainable is often only questionably so. Pursuing the point with students, we begin to connect climate-change denial and populist anti-environmentalism also to the often technologically driven sustainability projects that emerge in the comfortable (often recognisably ecomodernist) slot (Malm et al. 2021). Such situations point to troubles that are ignored at great cost to professional sustainability work as well as politics (but that is another debate!)

What I want to draw attention to, is how easily the comfortable slot is also a moralising or naïve slot, from where it is easy to be ignorant of how long and how much it takes for socio-technical shifts to happen. It is, as well, quite likely, an overconsuming slot. But for all that, we are (as part of the university community if not otherwise) members of it, and we should not judge ourselves, at least not too harshly, for it. Nor do we teach how to judge others. As teachers and as a community, to borrow once again from Isabelle Stengers, it might be best to leave “question of innocence and guilt ... to the judges. What matters is rather the possibility of creating relevant modes of togetherness between practices, both scientific and non-scientific; finding relevant ways of thinking together” (Stengers 2018, 145).

Ursula le Guin, a science fiction author whose work features in our teaching materials, also highlights togetherness, but from her own area of expertise, story telling. It is worth offering an extended quotation:

A people that doesn't live at the center of the world, as defined and described by its poets and storytellers, is in a bad way. The center of the world is where you live fully, where you know how things are done, how things are done rightly, done well.

A child who doesn't know where the center is—where home is, what home is—that child is in a very bad way.

Home isn't Mom and Dad and Sis and Bud. Home isn't where they have to let you in. It's not a place at all. Home is imaginary.

Home, imagined, comes to be. It is real, realer than any other place, but you can't get to it unless your people show you how to imagine it—whoever your people are. They may not be your relatives. They may never have spoken your language. They may have been dead for a thousand years. They may be nothing but words printed on paper, ghosts of voices, shadows of minds.

But they can guide you home. They are your human community. (Le Guin 2019).



Insights from the history of science like observation of science-fiction authors, are just some of the resources that university gives access to, and that, I suggest, truly support us in our human need. In the text quoted above, Le Guin goes on to write that all “of us have to learn how to invent our lives, make them up, imagine them. We need to be taught these skills; we need guides to show us how. Without them, our lives get made up for us by other people.”

Human need in 2022/3 is both generic and specific. Here I have concerned myself with the specifics of our students, mostly people wishing to build careers in making change towards more sustainability. I suggest that supporting them to have the confidence and shared impetus to act, to be simultaneously bold – even preposterous – and realistic, is enhanced by an experience of thinking together. This will help avoid having their lives being completely made up for them by other people, to use Le Guin’s words. Proof of this is in the student work submitted in these past years, which has strengthened over the time. Let me add that the atmosphere in the classroom is often full of humour and playfulness by the end of the courses. Perhaps in part this is also due to thinking of pedagogy in design for sustainability as a way to nurture designers with the capacity to judge, but not behave judgementally. Rather than proffering “we should” as research outcome, when it is informed by a collectively negotiated and historically informed sense of importance, learning in the classroom can nourish curiosity and creativity akin to the adventure of science and scholarship. The university is unrivalled as a place for honing conceptual and intellectual skills and inspiring technical capabilities, and at its best it does not ignore moral imperatives or unevenly shared problems but actively debates them.

An admittedly uncomfortable tension remains: on the one hand, the impetus for change or getting as fast as possible to the transformed future, and on the other, the need to slow down sufficiently for critical thinking as well as serious self-critique to happen. This may be irresolvable, but I suggest that rather than leaving a blank where the “we” is, and proclaiming from there what everyone else should be doing, as a Nordic design community we could do better. I have shown that it is possible to try, at least, to nurture a better awareness of our own positionality and a respect for existing values and identities, and so at least hope to avert the frustration of design work that is not that curious about values and goals that it does not share.

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ANTICIPATING THE FUTURES OF THE GENDER DIMENSION IN RESEARCH: STORYING ENTANGLED PRACTICES AND BODIES

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ABSTRACT

In recent years, scholars have been increasingly urged to address a gender dimension i.e. sex and gender impact in research. In this study, we explore scholars' explicit and implicit views about the future of implementing gender impact assessment (GIA) in research. We do so by analysing a series of co-design workshops in which participants anticipated possible futures regarding the use of a GIA checklist. We conduct a narrative inquiry of participants' stories consisting of the personas and scenarios created at the workshops. Our analysis reveals silenced viewpoints and tensions for adopting GIA, while unveiling quite stereotypical bodies and practices in the academic world. Based on our findings, we claim that storytelling approaches help create a safe space in which participants can express discomfort and conflicts playfully and with humour. This study contributes to advance co-design futures-making by accommodating plurality of voices when

discussing sensitive topics such as gender equality.

INTRODUCTION

According to the European Commission (EC) statistical report SheFigures, less than 2% of European research publications include sex and gender dimension (EC, 2021a). In practice, this means that most of the research conducted in Europe is gender blind resulting in inaccuracies when translating results, and fallacies when applying them. As case studies produced by the EC and the Gendered Innovations research group at Stanford University show, not considering the sex and gender dimension leads to bad praxis in research, wasting resources and negatively affecting human lives and planetary wellbeing (EC, 2020; Schiebinger et al., 2011-2020).

In research, the sex and gender dimension is important to assess what is researched and how the research is conducted, but also who engages in research. The overall picture is that the field of research is still strongly segregated by gender and ruled by the global north. Globally, two thirds of researchers are men and when looking at different disciplines separately, the challenge of segregation is even more significant and complicated (UNESCO, 2017). In addition to sex and gender other intersecting social categories such as disability, ethnicity, LGTB, race, socio-economic background, religion, belief, class, social origin, sexual orientation, and vulnerabilities have been increasingly considered in research as an intersectional approach (EC, 2021a). Among other factors, both horizontal and vertical gender segregation result in more homogeneous



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research groups, which limits what gets researched, the methods used, the diversity of data and the informants (Nielsen et al., 2018). Thus, in addition to being a basic universal human right, intersectional gender equality is deemed crucial for ensuring good research conduct, research integrity and sustainability (EC, 2020; Herbert et al., 2020; Nielsen et al. 2018).

As part of the EC's commitment to research excellence (EC, 2014), consideration of the gender dimension has become a mandatory requirement for all research applications unless it is duly justified why this is not necessary (EC, 2021b). To foster the inclusion of sex and gender in research, the EC has published numerous materials (see for e.g., EC, 2014 and 2020; EIGE 2022 resources). Parallel to the dissemination of how-tos and best practices, the Commission has also funded research projects aiming to foster gender equality using co-design and co-creation approaches (Thomson & Rabsch, 2021). In this article, we report experiences from an ongoing project in which we used co-design to develop gender impact assessment (GIA) tools (Heikkinen et al., 2021), including a specific design artefact called "a GIA checklist", to foster gender dimension in university research content, practices, and impact. In this paper, we present the results from a series of co-design workshops to discuss the GIA checklist and its implementation.

We understand co-design to entail collaborative negotiation of values among the participants (Mechelen et al., 2017) and we maintain that these values can be deciphered as much from what is not said as from what is said. The omissions, gaps, and absences need to be acknowledged, too. We are specifically interested in the potential of co-design, understood as futures-making and anticipation, to unveil gaps, absences, and what is not explicitly said about the futures of gender dimension and the GIA checklist and its implementation in Higher Education Institutions (HEIs) conducting research. Our analysis of the workshop outputs is guided by the following research questions: What practices and bodies are privileged in the future scenarios about the GIA checklist? Which practices and bodies are explicit and which ones remain tacit or implicit? What is the potential of design futures techniques for addressing the tacit dimension in co-design?

In the following sections, we ground our research on co-design and design futures literature, and introduce the research site and the methodology used. As part of the results, we distinguish participants' tacit and explicit views on GIA and discuss the potential of co-design and design futures techniques to make various types of knowledge and assumptions visible.

BACKGROUND

FUTURES-MAKING AND ANTICIPATION THROUGH CO-DESIGN

Co-design has been celebrated in design research and practice as an approach enabling "collective creativity as it is applied across the whole span of a design process" (Sanders & Stappers 2008, p.6). Co-design has its roots in various research and design disciplines and practices originating strongly from Scandinavia but also from other European countries and the United States (see e.g., Spinuzzi 2002).

Co-design is much about futures-making and anticipation; the very practice of design has been described as futures-making as design solutions embed a particular way of relating to the world, leading to new behaviours and ways of thinking (Akach et al., 2021; Sanders & Stappers, 2014). Literature has linked co-design not only with collective creativity and joint imagination (Durall et al., 2019; Sanders & Stappers, 2008; Steen, 2013), but also with anticipation (Light, 2021; Korsmeyer et al., 2022): co-design can be approached as an anticipatory practice (Korsmeyer et al., 2022). From this perspective, anticipation is understood as "a collective capacity to imagine and use futures in the present" (Vesnic Alujevic et al., 2019, p.97). It is about the presence of that which is not (yet) realised, offering generative, speculative routes also to imagining futures otherwise (Gatehouse, 2020).

The rationale for using co-design approaches with a futures-orientation is because many futures are possible, and because the futures are not far in time but actively constructed in everyday practices and decisions taken in the present (Light, 2021; Slaughter, 2018). Collective anticipation can be seen as a strategy to raise awareness and trigger discussion about the futures we want to live in. Publicly negotiated anticipation has been linked to democratisation as it involves that diverse stakeholders are able to understand and influence future visions, co-build them, and exercise some agency upon them (Binder et al., 2011; Light, 2020). From this perspective, collaborative futures-making, and anticipation, intertwined with participatory design principles, seek to create alternative possible futures that not only serve to give voice and promote agency of diverse groups, but also offer a way to deal constructively with controversies (Ehn, 2016; DiSalvo, 2010).

THE UNSAID, THE SILENCED AND THE TACIT

Design and futures have been framed as disciplines of dialogue (Celi & Colombi, 2020). Despite the perceived value of supporting participation and dialogue in design and futures-making practices (Ehn, 2016; Light 2021), the process is not free from challenges. Among those, scholars have pointed at tensions between tangible and



intangible aspects of futures shaping (Celi & Colombi, 2020), as well as difficulties in making visible stakeholders' mundane, invisible work as well as their tacit knowledge since quite often this type of knowledge is less-readily articulated and thus, it remains invisible (Edwards & Korsmeyer, 2017; Langley et al., 2018).

For design practice, not making stakeholders' perceptions and feelings explicit is troublesome because it hinders empathic understanding (Kankainen et al., 2012; Langley et al., 2018) and can privilege and iteratively reify those knowledges and practices that are already well-established and articulated instead of opening avenues for imagining futures 'otherwise' (Pihkala & Karasti, 2022).

Studies have scrutinised at the deeper level the significance of absences, silences, gaps, the invisible and what is not said. Star and Strauss (1999) discuss the politics of invisible work: they discuss people and work that are not noticed, and thus, not counted as relevant. Sefyrin and Mörtberg (2009) analyse silence in co-design, arguing that there may be dominant discourses offering a preferred way to approach a topic, but also many silenced viewpoints that should be acknowledged and voiced out. They follow Foucault's work, highlighting that in discourses, it is important to acknowledge both what is said and what is not said and associated power play (Foucault, 1972). Going further with the role of silences, Mörtberg and Stuedahl (2005) discuss how powerful silence can be in co-design. They point out that silence can indicate both power and powerlessness, it can indicate a lack of words, something unspoken as well as something unspeakable. Hence, silence can be seen to dominate and exercise power, to reproduce a dominant understanding of the world as well as to act as an indication of resistance or something one is unable or unwilling to voice out.

The potential of futures studies and co-design to elicit stakeholders' tacit knowledge has been highlighted, identifying various methods to make knowledge explicit and enable dialogue (Akama & Prendiville, 2013; Durall et al., 2022; Rossel, 2012; Stuedahl & Mainsa, 2019). Among these methods, personas and scenarios have been used to project alternative futures (Celi & Colombi, 2020; Morrisson & Chisin, 2017). Other popular strategies include methods based on making and enacting (Akach et al., 2021; Kelliher & Byrne, 2015; Sanders & Stappers, 2014; Spinuzzi, 2005). For instance, in methods like Make Tools (Sanders & Dandavate, 1999) and Collective Making (Langley et al., 2018), and through generative toolkits (Collard & Briggs, 2020), participants are invited to express their thinking through artefacts they generate in design sessions. These methods build on the materiality of the process and participant's creative making to reveal tacit assumptions that would be challenging to capture otherwise. Some voices outline the value of the stories

accompanying the artefacts, which enable facilitators to inquire about participants' thinking (Berger et al., 2019), others point at the speculative discussions surrounding the collaborative prototyping as an arena in which tacit assumptions become visible (Edwards & Korsmeyer, 2017).

Design futures and co-design have also been used to support embodied experiences, for instance through methods based on enacting such as e.g., in Brandt and Grunnet's (2000) adaptation of the Theater of the Oppressed. Bridging the "gulf of experience" has been considered valuable "to engage people more viscerally in futures conversations" (Candy & Dunagan, 2017, p. 2). In this study, we build on the assumption that such experiential futures approaches in co-design processes can help to reveal the unsaid about participants' and researchers' mind and bodies.

CO-DESIGNING GENDER IMPACT ASSESSMENT

This study was conducted in the context of a European Union funded project, Redesigning Equality and Scientific Excellence Together (RESET), that focuses on mainstreaming intersectional gender equality and equity in HEIs. The project outputs include a set of GIA tools to assist researchers include the gender dimension in their research practice, both in the design of research activities as well as products of those.

DATA COLLECTION

Three co-design workshops were organised with researchers and research specialists from a Finnish university to share and discuss the first version of a GIA checklist consisting of questions about the sex and gender dimension in research. The feedback obtained during the workshops would be used to inform further iteration rounds. The aim was to get a deep and nuanced understanding of how sex and gender as well as intersectionality are embedded with research work, structures and practices. The workshops included 11 participants from Technology, Social Sciences and Humanities, and Life Sciences. All participants had experience in research, and their roles ranged from tenured professors to lecturers, postdoctoral researchers, and research service specialists.

The workshop methodology was an adaptation of the Puppet Scenarios method (Kumar, 2012). This technique focuses on concept exploration and involves creating scenarios, which represent current issues and possible solutions to them, and then enacting these scenarios as narratives (Kumar, 2012). We adapted this method to take a future orientation to the sex and gender dimension in research, aiming to anticipate potential futures. Our rationale for using the puppets in the scenarios was to support playfulness and lowering the threshold for expressing one's thoughts, emotions, and reservations related to new requirements for academic

research applications. These were part of our efforts to create a safe space, where participants would feel comfortable to envision what could happen in the future world when a new solution is in use.

Before the workshop, participants received information about the project, the GIA checklist tool, the rationale for using a co-design approach for its development and were asked to give their informed consent. They were also asked to fill in a pre-workshop questionnaire on GIA when planning the research (n=11 answers).

During the workshops, participants shared their experiences when answering the questionnaire and discuss GIA and the value of the checklist to support reflection on the gender dimension in knowledge production. After this, they (individually and in groups) created stories portraying future uses of the GIA checklist in HEIs. The stories consisted of a persona (a fictional character) and a scenario (a sequence of events and actions performed or experienced by the persona) presenting a possible way in which the GIA checklist might be used in the future. The participants created their stories while crafting puppets that represented their personas, using various materials, such as papers of different colours, post-it notes, scissors, pens, and glue. Then, they presented their future scenarios to other workshop participants as puppet theatre performances. The workshop ended with a group discussion on the visions presented in the performances.



Figure 1: Participants crafting at the co-design workshop.

The workshops resulted in altogether 11 stories (personas with accompanying scenarios) and audio (336 min.) and video (145 min.) recordings of the workshop, photographs, and the researchers’ observation notes. After the workshop, the participants answered a follow-up questionnaire (n=9 answers) on their reflections and potential change of practice after taking part in the GIA co-design session.

DATA ANALYSIS

The 11 stories produced in the co-design workshops form the core data for our qualitative analysis. We draw

on narrative inquiry, which allows us to investigate the stories as told with the future personas and scenarios, not as descriptive of reality but as representing participants’ experiences, feelings, and beliefs (Kim, 2015) in their work related to use of the GIA checklist tool. In analysing, the “researcher’s role is to interpret the stories in order to analyze the underlying narrative that the storytellers may not be able to give voice to themselves.” (Riley & Hawe, 2005, p.227). The process of analysis involved reflexive, iterative reading (Squire, 2013) of the stories produced, guided by our research questions.

We first organised the data to produce concise narratives from the personas (represented as puppets) and the scenarios, which was followed by thematic analysis of the narratives. During the first level of analysis, in response to the first research question, attention was directed to identifying the work practices and embodied aspects that were present and privileged in the stories (the personas and scenarios). The second level of analysis focused on the identification of what is not explicitly said but implied in the stories. These two levels of approaching the narratives enabled us to bring analytical attention to the interstice of lived experience and future possibilities of the GIA.

RESULTS

Most of the personas created by the participants referred to university researchers, who were identified with various genders (three women, two men, one transgender, and seven non-defined) and with diverse levels of experience and responsibility: doctoral researchers, research project coordinators, research group leaders, research specialists providing in-house and external services to the institution such as grant writers, and people in leadership positions involved in defining the university strategy (see table 1).

The future scenarios focused on how the generated personas would engage with GIA in HEIs. In most of the scenarios (n=9), the GIA checklist was a tool to help researchers address a new mandatory requirement about the sex and gender dimension in research content. In other cases (n=2), participants opted to portray how GIA might be experienced in the academic community depending on the individual’s roles and power inside the organisation as well as in their everyday lives (see table 1).

Table 1: Description of the stories created at the GIA co-design workshops

Persona	Futures scenarios
Horizon 2020 proposal coordinator (female)	A coordinator realises the day before the submission deadline that the mandatory section on gender and sex dimension has not been addressed in the proposal. When reading the GIA checklist, she feels



	irritated because the tool is not helpful. She panics, feeling unable to make a successful application.
Horizon 2020 proposal coordinator (female)	A coordinator needs to address the gender and sex dimension in a research application she is preparing with some partners. She goes through the checklist of questions, getting some ideas to discuss with the consortium partners.
Grant writer (man)	A grant writer is preparing applications for automobile research. He notices that GIA is a mandatory requirement in many competitive funding calls. To increase his chances, he systematically ticks the GIA checklist boxes.
Anxious researcher preparing research application (woman)	A researcher goes through the GIA checklist when preparing a research application. She feels the questions are very far connected with her research interests, feeling frustrated because she is not able to meet those requirements.
Research funding strategist	A researcher carefully reads the GIA questions and drafts the proposal strategically to meet all the GIA criteria and thus, increase the chance for getting funding.
Three different personas with different attitudes regarding GIA and decision-power.	The persona with high decision-power delegates GIA work to junior researchers and invites other researchers specialised in gender and equality to join interdisciplinary research applications. The persona with expertise in GIA is aware of the opportunistic uses of GIA in research, but still willing to collaborate with open-minded junior researchers.
Research services specialists	They work together with researchers to familiarise them with GIA, aiding them to approach the sex and gender dimension in research proposals. This close work results in high quality applications.
Research services specialists	Due to heavy workload and limited time, their support on GIA consists in sending researchers a link to the GIA questions checklist. This is not useful enough for the researchers, who get a negative impression of the specialists' work.
Young research leader	The researcher leader uses the checklist for preparing research proposals, but also as a tool to guide thinking on how to implement GIA in the group's research.
Researcher advocating for objective, facts-based research	The sex and gender dimension in research is seen as a strategy to filter applications in competitive research. The checklist is strongly rejected by the researcher who feels the tool sabotages their research. They complain to the university rector.
Transgender scholar	The scholar selected the workplace based on the institution's world-leading policies for integrating sex and gender in research. The researcher feels safe and proud to be

	part of an inclusive community committed to excellence in research.
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The scenarios focusing on the GIA checklist anticipated futures in research can be classified as best and worst cases as well as opportunistic practices. In the best-case scenarios, the checklist is presented as a support tool when preparing research proposals. Researchers would go through the list of questions to get ideas and inspiration at early stages of the proposal preparation and structure the collaboration with partners by using the questions as a discussion agenda. In the worst-case scenarios, the checklist would not be up to the researchers' expectations and would not help them to address the sex and gender dimension in their research plans. Among the opportunistic practices are superficial uses of the checklist to increase the chances of receiving funding.

In the scenarios pointing at researchers' experiences on GIA and the checklist, participants highlighted power relations inside academia as well as differences in how GIA might be approached depending on the discipline and the knowledge paradigm. They also warned about the risk of outsourcing work to researchers with expertise in GIA, for instance by making them write the section on sex and gender dimension in the proposal, even if their role in the proposed research would have been limited. From a different perspective, the sex and gender dimension in research was linked with an institutional commitment for cultivating inclusive and caring environments. This was considered to have a positive impact in the academic community, but also in the external image of the institution.

The scenarios created by the participants at the workshop convey possible futures of GIA (and the checklist) in HEIs. In our analysis, we focus on participants' explicit and tacit views on the practices and bodies connected to the GIA checklist (see table 2).

Table 2: Explicit and tacit views on the GIA checklist futures in research

Views about the GIA checklist futures	Work practices	Bodies
Explicit	<p>Competition for obtaining research funding.</p> <p>Individual approach to the preparation of research proposals.</p> <p>The sex and gender dimension is one of the last sections to be addressed.</p>	<p>Researchers' gender.</p> <p>Responsibility for addressing the sex and gender dimensions in research applications.</p> <p>Researchers' emotions.</p>

	GIA contributes to research quality.	Sex and gender dimension in research as embodied.
Tacit	<p>Top-down approach to support change in research practices.</p> <p>The sex and gender dimension increases research bureaucracy.</p>	<p>Researchers' capability to control their work.</p> <p>Understanding the sex and gender dimension in research as a problem to solve.</p> <p>Well-being in academia.</p>

When presenting their stories, most of the participants used humour for envisioning a near-middle term future resembling their current practices. For instance, in these future scenarios research was strongly dependent on competitive external funding. The sex and gender dimension was mentioned as a section in the research proposal template, usually one of the last to be filled in. Participants were also outspoken regarding the work practices connected with the preparation of research proposals, which heavily relied on the coordinators' individual work. Even in the best-case scenarios describing a more collaborative approach using the GIA checklist at early stages, the writing of the section on the sex and gender dimension was assumed to be the coordinators' task and thus, their responsibility. If researchers were not aware of the interplay of sex and gender aspects throughout the research, not just in aspects connected with sampling and data collection, the GIA checklist felt overwhelming. This reflected in the personas' emotions, which ranged from feelings of failure and frustration to anger and resistance for having to address GIA in their research. Most critical scenarios acknowledged researchers' different levels of awareness on the sex and gender dimension in research, depending on the discipline and knowledge paradigm. The scenarios portraying positive futures about the GIA checklist referred to its value for increasing research quality and the need to understand sex and gender as embodied, also in researchers' lives.

Our analysis of participants' tacit views underlying the stories created at the co-design workshops revealed a generalised assumption that changes in research practice dealing with the sex and gender dimension would follow a top-down approach. Only in one scenario a bottom-up approach was mentioned through scholars' generational renewal. In most cases, the decision to address GIA was externally motivated through the inclusion of mandatory requirements in the EC calls for research funding. In most negative scenarios, instruments like the GIA checklist were seen as ways to impose practices, often considered irrelevant and not related to research quality. The fact that the sex and gender dimension was referred to as "another section"

of the template to fill in when applying to extremely competitive calls, led to associating GIA with increased bureaucracy in research. In the most sceptical cases, the additional paperwork was seen as a way of filtering and selecting proposals, and thus justifying the allocation of funding. From this perspective, the section on the sex and gender dimension was a problem to solve to increase the likelihood of getting funding. In all the scenarios, there were implicit assumptions regarding the researchers' capability to control their work. Considering that addressing the sex and gender dimension was perceived as mandatory (in some cases as an imposition), researchers felt they had little understanding and control over broader strategies (developed by the EC and HEIs), and this resulted in feelings of failure and anxiety. Researchers' acceptance of their limited agency in the academic system made them assume a tactical approach towards GIA, which consisted in, for instance, using the checklist to ensure the minimum requirements were met. Only in one case, GIA was presented as a strategy contributing to increasing research quality as well as the well-being of the academic community.

DISCUSSION AND IMPLICATIONS

In this section, we reflect on and discuss the implications of the anticipatory futures practices we collaboratively experimented within our co-design process, based on our analysis of the explicit views and implicit cues that we read from participants' stories about the GIA checklist's possible futures. In the analysis, we paid attention to what participants said as well as to what they implied or did not say, while we wish to underscore that our analysis of the silences, gaps and what remains not said is necessarily partial and heavily guided by our own perspectives, practices and bodies. Hence, in addition to the issues presented in this study, many more issues not explicitly mentioned by the participants would have been identified by other critical readers.

In our analysis, we observed that although participants' stories were explicitly about the future uses of GIA in research, implicitly these stories were firmly tied to their current practices and bodies in HEIs. In the stories, competition and individualism were assumed as persistent conditions of future academic work. The checklist, rather than being an instrument for a more radical change, was regarded just as a tool to make researchers' life easier by ensuring success in the constant struggle of obtaining external funding for research. Then again, in their stories the participants referred to negative emotions experienced in contemporary academic work, in line with what has been reported in research studies (see Brunila & Valero, 2018). Similar to other studies using personas in design-oriented futures (see for instance Morrisson & Chisin, 2017), this method allowed participants to embed their



biographies and personal stories in their creations, bringing a layer of complexity to their anticipated futures scenarios.

The implicit – and unintended – presence of the conditions of the current academic work reminds us simultaneously of the ways in which the work related to GIA is done within and entangled with the wider frames and structures of academia. Here, we want to highlight the challenges involved in interpreting the co-design outcomes. We speculate whether these personas and scenarios should be read as critical commentaries towards current and future practices related to the gender dimension in research and knowledge production, instead of a passive acceptance of them. We wonder if such futures scenarios should be seen as statements - displaying cynicism or criticality - regarding the persistence of particular bodies and practices in research. As for implication for future research and design, we underline acknowledgement of the strength of the existing institutional setting and culture with its power dynamics in anticipatory and futures practices in co-design, in line with Iivari and colleagues (accepted for publication), who show how co-design is embedded within and shaped by a variety of local, national and international practices, policies and politics.

We maintain that our anticipatory futures practices experimented with in the co-design workshops succeeded in inviting and encouraging the participants to consider alternative, desirable as well as undesirable, futures with the GIA checklist, providing a safe and playful space to address as well as to critically scrutinise a sensitive and power-laden topic. When looking at the implied or tacit, absent, or silenced issues (such as the precarity of research funding or researchers' stressful work conditions), we argue that the personas might have worked as a mask that enabled the participants to talk about close uncomfortable presents from a safer place. Citing Oscar Wilde, "Man is least himself when he talks in his own person. Give him a mask, and he will tell you the truth." (1981, p.60). Thus, we may speculate that the persona-mask enabled more honest feedback on the GIA checklist and the current academic system. As a related issue, we observed participants' use of humour when discussing their personas and scenarios. This can be read as an indication of them approaching the current power structures and gendered practices and bodies in the academic world playfully to challenge and even question them. Such use of humour aligns with existing literature describing humour as a powerful, empowering tool for questioning the status quo (Case & Lippard, 2009) as well as a valuable resource in (design) interaction (Iivari et al., 2020). The implications of these findings allude to the importance of a safe place and various usages of humour for futures-making and anticipatory practices in co-design.

As co-design literature shows, the introduction of tools in workplace settings involve a change in the practices, and the place culture (Bødker et al., 1988). Likewise, the introduction of a tool like the GIA checklist involves both a new epistemic demand for a rigorous analysis of sex and gender in knowledge production and a sociocultural change towards gender equality. Such a change might not be "easy" as it requires a critical discussion of the status quo in HEIs, creating a space to negotiate values, as well as reconsideration of who holds power and privilege in academic and research practices, with an intersectional perspective. Although our co-design workshops involved a limited number of participants, we already noticed some tensions. For instance, one of the tensions underlying the stories refers to GIA as an imposition leading to extra work when preparing research proposals, silencing the current system of power and privilege present in HEIs' practices. Finding tensions and resistance in controversial co-design processes such as those striving for gender awareness and gender equality should not be a surprise, but something that, as designers and facilitators, we need to be ready for (see for e.g., Korsmeyer et al., 2022). Narrative methods such as storytelling enable participants to express with a level of flexibility that enables interpretation (Talgor & Hendriks, 2021). This is particularly useful in expressing discomfort and resistance or even confronting the purpose of the design. Following the spirit of agonistic pluralism (diSalvo, 2010) and feminist utopianism (Bardzell, 2018) in design practice, we argue that we need to accommodate plurality of voices by creating spaces in which stakeholders can express the conflicts and tensions that a new tool (in our case the GIA checklist) might generate. Leaving these conflicts unsaid or silenced doesn't make them disappear, but eliminates the possibility of having a discussion, key for co-creating shared futures.

This study contributes to the literature discussing absences, silences, and gaps in co-design (e.g., Mörtberg & Stuedahl, 2005; Sefyrin & Mörtberg, 2009; Star & Strauss, 1999); yet leaving many paths open for future studies. Our data indicates that in co-design sessions on power-laden and sensitive topics specific attention may be needed on creating a safe and playful place for futures-making. It is also important to acknowledge that such futures-making tends to be grounded in current realities, breaking away from which may need careful scaffolding. Our analysis was sensitised to the silenced viewpoints, revealing several of them, while unveiling quite stereotypical bodies and practices in the academic world. We are also happy to report the participants voiced out their frustrations and challenged many existing notions, but we speculate on whether and how we could have offered even a safer place for the participants for envisioning greater gender responsibility in HEIs and more equal futures in

research. How could one invite the participants to collaboratively scrutinise the unspoken and the unspeakable (Mörtberg & Stuedahl, 2005) or invite the participants to reflect on what it is that they are unable, unused or unwilling to voice out (Sefyrin & Mörtberg, 2009). Future work should also scrutinise the invisible people and work - those not noticed, not counted as relevant (Star & Strauss, 1999) - in the context of gender equality work in HEIs and in relation to GIA. A deeper analysis on gaps and silences indicating them is warranted in the future.

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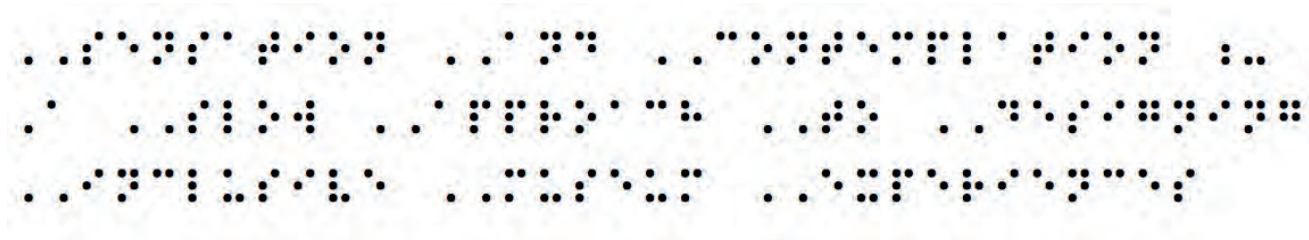
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SENSATION AND CONTEMPLATION – A SLOW APPROACH TO DESIGNING INCLUSIVE MUSEUM EXPERIENCES

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ACKNOWLEDGEMENT

Before we step into the——space of this metaphorical museum experience it is important to begin with an Acknowledgement of Country on which this research takes place. Bendigo Art Gallery (BAG) is situated on Dja Dja Wurrung land (Central Victoria, Australia). Dja Dja Wurrung people have cared for this land and continued their rich cultural practices on Country for thousands of years. I pay my respect to their Elders past and present, as custodians of deep knowledge and carers of Country.

Because this research is related to time, temporality and duration, it's also important to highlight that Aboriginal people in this country are the oldest continuing culture in the world, they have been caring for Country and engaging with creative practice for more than 60,000 years. By contrast, the speed with which colonisation has changed this country in less than 250 years, has caused great harm to Aboriginal people and Country. Slowness as a resistance to fastness can be viewed as a decolonial act, an act of care, and there is much to learn about slowness from Indigenous ways of knowing and being.

(The richness of diverse cultural philosophies of slowness is beyond the scope of this paper but further exploration of this is to be included as a chapter in the thesis of this PhD project.)



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EXHIBITION INVITATION (ABSTRACT)

In a world where stillness and silence are increasingly hard to come by, museums can provide space for slowness, reflection and contemplation that contributes to wellbeing as well as inclusion of communities. This paper maps my current ongoing PhD research into the benefits of a slow approach to designing museum experiences, as well as how this research contributes to a larger project making Bendigo Art Gallery more inclusive of blind and low vision (BLV) visitors. It guides the reader through a metaphorical museum visit, where inclusion and wellbeing are the exhibition subject. The reader is invited to engage with sensory design interventions which aim to address the absence of accessible materials for BLV visitors in museums and discusses the potential for innovative design in this——space.

Note to the reader – Considering the ‘exploratory’ nature of this paper and its contents I felt there was opportunity to make space for an Acknowledgement of Country as well as image descriptions for accessibility. These details are not often included in research papers but are more common practice in digital and physical museum spaces. I have also left blank spaces in the layout with the intention of slowing the reading experience.

Figure 1. [Image description: These three images depict the train Journey from Narrm (Melbourne) to Dja Dja Wurrung Country (Bendigo). The sky is mostly cloudy and grey with hints of blue, the colour of the landscape changes from greens to browns as you journey further inland to drier climates. The vegetation also changes, transitioning from colonial farm landscapes to native bushland.] Photographs: Jenna Hall

1. ENTERING THE MUSEUM (INTRODUCTION)

Imagining you have just stepped off your train journey to the museum and are entering the museum foyer—this introduction is designed to help you attune to your surroundings. Slowness exists in spaces between conversation, between sound, between engagement with objects, people and environments. Slow experiences bring us back to our bodies, prompting new ways of thinking and the process of learning and contemplating new ideas. Designing for this means designing for emptiness, designing for the in between means making space for pause and contemplation. Similar to how Akama (2015) talks about the Japanese philosophy of *Ma* as in-betweenness, the space that slowness opens up holds potential for a ‘chance of becoming’ (Akama, 2015). Slowness thrives off silence and it creates space for the emergence of new ways of thinking, understanding and being, as individuals and communities. Of particular importance in the context of the museum, are the opportunities for slowness in these spaces to support the inclusion and wellbeing of visitors.

Slowing down is something we usually need to be reminded to do, myself included. In a museum there is much temptation to skim over things and see what's around the corner or in the next room, but what changes when we take things slower and allow more space—between? My personal seeking of slowness is an effort to balance the speed with which I generally have to operate in the everyday. In saying this I acknowledge the privilege of operating at different speeds, where for those with disabilities moving, working, or speaking slowly may not always be a choice.

GALLERY 1 WALL TEXT (INTRODUCTION CONTINUED)

In the next phase of your museum paper experience, you enter the first gallery room where a wall text outlines the contents of the paper. This project introduces ‘slow design’ as a response to issues of inclusion and community wellbeing by contributing to a larger Monash University research project ‘*Inclusive Gallery Experiences: Creating an Accessible Bendigo Art Gallery for Blind and Low Vision Visitors*’. This practice-based research emphasises a ‘slow’ approach to designing museum experiences, suggesting that by slowing down our experience and placing greater awareness onto other senses we can deepen our understanding of, and personal—as well as interpersonal—connections to art.

Slowness is expansive – when considered in relation to design it provides space to consider the broader implications of design and identify relationships between design challenges and the interconnectedness of design possibilities. Slowness expands our awareness. In slowness we can find deep knowledge of self and empathy for others. Slowness can be an act of care for the self, for others and for the environment. Slowness doesn't leave anyone behind. So, how might we design for slower, more mindful, intimate and sensory experiences in museums? How might this make museums more inclusive? And what role does the presence or absence of technology play in this?

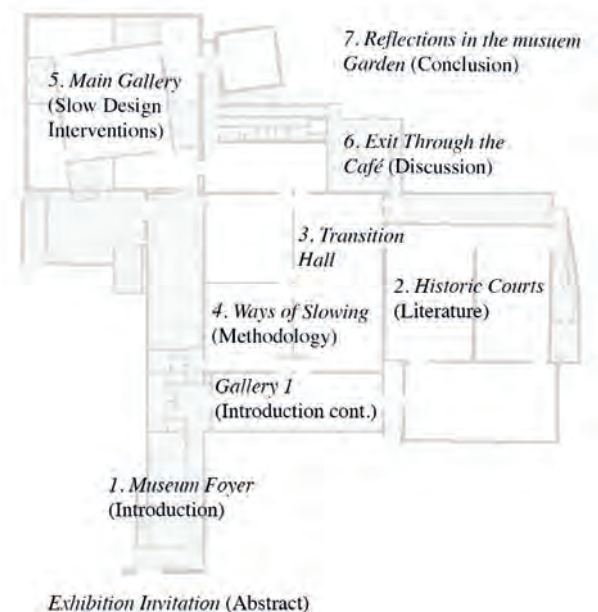


Figure 2. [Image description: The structure of the paper mapped on the floorplan of BAG. This graphic has been used in the ‘*Inclusive Gallery Experiences*’ project printed with a thermal fuser as a tactile map for BLV visitors.] Source: Accessible Graphics (www.accessiblegraphics.org)

The project is fortunate to have access to gallery and studio spaces——at BAG for use as testing grounds for experiments with ‘slow’ design interventions which will be discussed later in the paper. Using the floorplan of BAG (Figure 2) to structure the paper, I have mapped the contents of this ‘museum experience’ with space intentionally left in——between.

2. HISTORIC COURT: PERMANENT COLLECTION (LITERATURE)

Moving into the 'Historic Courts' you are introduced to the foundations from which this project emerges.

Building on literature from the Nordes archive, this research situates itself in a space between—discussions of exhibition design (Pilegaard, 2021; Turpeinen, 2005) temporality and reflection (Baudo & Henning, 2013) and slow design (Brown, 2011). Contributing to these lines of inquiry, this paper takes a specific look at slowness and sensory design in the museum. Slowness can encapsulate a broad range of considerations for ways of being, 'slow' has been popular as a resistance to increasingly rapid production and consumption of fast food, fast fashion etc. Brown (2011) argued the need for 'slow homes' as inspired by the values of Carlo Petrini's 'slow food' movement in resistance to the damaging effects caused by the speed of 'McMansions' built by big companies with a lack of care for their residents. The term 'slow design' was coined by Carolyn F. Strauss and Alistair Fuad-Luke who published 'The Slow Design Principles' in 2008. The principles are intended as prompts for designers to consider how their practice might better support individual, social and environmental wellbeing. Encouraging thinking around how design artifacts might be engaged with and interpreted from diverse perspectives, and what they help to reveal about the human experience. To address the social responsibilities of design, the authors suggest collaboration with communities is an essential part of the design process. They also emphasise the importance of seeking to produce design artifacts, interventions and experiences which induce 'reflective' over excessive consumption (Strauss and Fuad-Luke, 2008). More than a decade on Strauss (2021) has continued her 'slow research' which has expanded and evolved over time. In more recent publications Strauss (2016, 2021) invites artist's, designers and architects to contribute their thoughts on slowness and slow practice. Strauss identifies a link between slowness and feminism, with the majority of contributions being by 'women or individuals who practice tactics of femininism(s)' (Strauss, 2021, p.17). Slow research has also been a topic of discussion in broader discourse related to climate change and sustainability with philosophers Isabelle Stengers (2018) and Kate Soper (2020) questioning how we do research, how we consume and how we live well.

Although grounded in design philosophies and practice this project draws from discourse in museum studies related to inclusion and wellbeing, seeking to create design interventions which respond to issues in this

field. Sina Bahram (2018) discusses the difference between inclusive design and universal design and connects it to his experience as a blind museum visitor. While universal design provides designers with an impossible task of designing for all audiences, he says 'inclusive design recognises that people have multiple forms of identity' and that 'accounting for those differences doesn't mean making everyone the same' (Bahram, 2018, p.25). Bahram argues there is much space—for further research into designing accessible experiences but it requires a commitment from museums as he explains 'inclusion is a state of thinking and acting toward a shared purpose based on a commitment to iteration, refinement and self-improvement' (Bahram, 2018, p.34).

Health and wellbeing have become prominent trends in museum studies over the past decade. In 'Connecting Museums' (2020), Nuala Morse speaks of the social role of museums, connecting social inclusion with health and wellbeing. Including the diversity of responses needed to accommodate the diverse needs of visitors and wellbeing of their communities. Morse suggests that when considering their social role, museums need to be flexible and responsive. Change should be viewed in a more 'continuous and adaptive manner' as opposed to the rhetoric of reinvention or revolution that such discourse generally encourages (Morse, 2020, p.60)

3. TRANSITION HALL [THE GAP]

In acknowledging the absence of opportunities for tactile engagement in museums, our awareness is directed to the possibility for greater care in exhibition design due to the necessity of touch and assistance of technology for BLV visitors. When thinking more broadly we can also imagine the potential benefits for what more thoughtful inclusive design, and tactile experiences can have for all museums visitors by prioritising the specific needs of BLV visitors as well as care givers who are likely to accompany them.

'There is some-thing excessive in that we touch with our whole bodies, in that touch is there *all the time*— by contrast with vision, which allows distant observation and closing our eyes.' (Puig De La Bellacasa, 2017, p.99)

Touch is omnipresent, but as with slowing down we need often to bring our awareness to it, and in museum—spaces where touch is prohibited there is by contrast a need for BLV visitors to be able to touch things in order to make sense of art without vision. In 'Touching Visions' Maria Puig de la Bellacasa (2017)



contemplates the ethics and politics of touch, relationships between touch and care and touch and emerging technologies – all relevant to ways of thinking about designing experiences for BLV visitors in museums.

4. EXHIBITION PRIMER – WAYS OF SLOWING (METHODOLOGY)

Prior to entering the ‘main gallery’ space, some context must be given to the connections between the theory and practice of the project. As a PhD project, by contrast to other projects with tighter timelines, the act of researching is able to embrace a slow process that can ensure that ethics and empathy are found at the core of how the research is conducted. Fieldwork at BAG is an iterative process; of working with others and working alone, questioning and responding, testing and reflecting, experimenting and refining. The methodological approach is drawn from design ethnography (Pink, et al., 2022) and is centred around the concepts of relationality, immersion and emergence. This is being explored through qualitative methods of interviewing, design interventions and participatory activities with gallery staff and visitors.

Maintaining a practice of critical autoethnographic reflection (Adams et al., 2015) helps me to situate myself within research as a designer but also as a museum visitor and member of the dominant culture (Tilley-Lubbs, 2016) in this space. We bring our subjectivities to our research; and it’s important to acknowledge this. Autoethnography embraces subjectivity, embodiment, and reflexivity, guided by the content, as well as context, of the research. It is about starting with the self to get to the granular, specific and personal – so that when you approach and relate to others you have something to work with; the researcher’s personal position provides a bridge to the experience of others (Holman Jones, 2016).

Methods of photography, participatory activities and interviews, all produce material for reflection and opportunity to invite other people into the research process. Photography has been used as a key method of documentation, analysis and reflection in studio and in the field. Photographs from workshops at BAG provided insight into ‘ways of touching’ or ‘sensing objects’, capturing observations that might have otherwise escaped my attention. A photo essay of the train ride to BAG (Figure 1) also produced research material to reflect on, including how this ‘slow’, ‘in between’ time traveling to the museum could be thought of as part of the museum experience. Revisiting images extends the experience of fieldwork and allows for slower reflection outside of the research environment, allowing me to explore the experience in multiple ways,

in person and in memory. Design interventions and workshops at BAG provide opportunities for designing sensory experiences related to exhibition concepts, narratives and materials. Having access to this space——allows me to invite staff and visitors into the design process at different stages.

As part of a series of interviews conducted with experts working across the fields of slow design, museum studies and psychology in November 2020, I was fortunate to speak with Carolyn F. Strauss, who, since publishing the ‘Slow Design Principles’, founded *Slow Research Lab* (www.slowlab.net). I spoke with Carolyn about how her ideas of slowness have evolved through her slow spatial and curatorial practice. On her work with SlowLab she says:

“Telling more of the story is also part of a *slow* approach, not just that it’s sensory and a different kind of durational engagement, but also that it’s challenging and, you know, prickling different nerves and different things than you maybe expect. Or maybe even telling a story that’s not complete, that leaves more questions than answers. Something like that, we regard as *slow*—as having certain *slow qualities*.” (Carolyn F. Strauss in conversation with Jenna Hall, November 2020).

On this note, the paper now enters a——space to share ‘more of the story’ about my practice designing slow interventions for inclusive museum experiences.

5. MAIN GALLERY – SLOW DESIGN INTERVENTIONS

Moving into the main gallery you are immersed in sound. A familiar song by a well-known pop star except more ambient and s l o w. You can hear other visitors talking about the installation ‘It’s very soothing on the senses’ one person says. ‘It would be great to have in a quiet space in the gallery - it’s sometimes exhausting having lots of sound in the gallery.’ says another. As you reach to pick up a balloon and experience the sensation being discussed, another visitor holding a balloon close to their chest says, ‘It’s like [the vibration] goes through you’. The visitors you share in this experience with have come to the gallery for the ‘Access Elvis’ sensory tour, one of two dedicated events designed to provide exhibition access for BLV visitors and their friends and family. Someone in the group asks ‘Is this always here? It should be part of all exhibitions, just 3-4 pieces at least that make it more inclusive.’ As you ponder what seems a very reasonable request, the

room begins to get increasingly packed as the general admission crowd begin moving through, they too engage with the intervention and one expresses *'I love music, but I've never thought of [experiencing] it like that'*. This openness and awareness to experiencing something differently is as Akama describes 'a potential of awakening, perceiving attuning and sensitising to between-nes' (Akama, 2015, p.272).

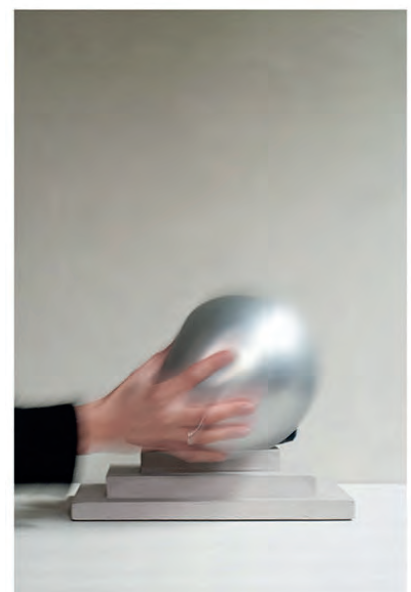
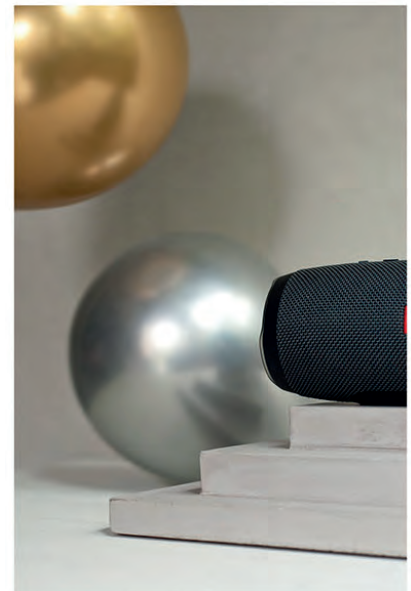
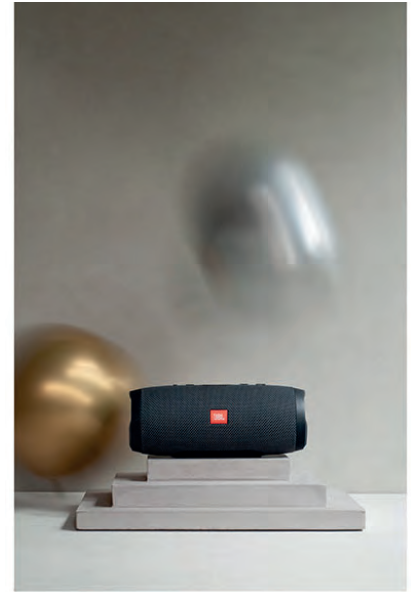


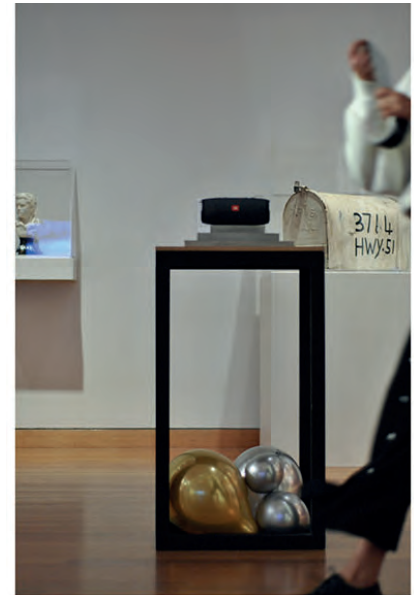
Figure 3. [Image description: These three images depict design interventions shot on a light grey coloured backdrop in the designer's studio. A black speaker sits on top of a moulded grey plaster sculpture with three stepped levels which reference the art deco details in the exhibition design of 'Elvis: Direct from Graceland' at BAG. Metallic gold and silver balloons move in and out of the camera frame and appear blurred due to the long exposure used for photography. A hand holding a silver balloon moves into one of the shots and in front of the speaker to demonstrate how to engage with the intervention. Audio track: 'Can't Help Falling in Love' (instrumental) slowed 50%.] Photographs: Jenna Hall

‘Access Elvis’ was a multisensory access tour for BLV visitors designed by the *‘Inclusive Gallery Experiences’* project team for the ‘Elvis: Direct from Graceland’ exhibition at BAG. The intervention I designed explored sound and vibration using portable speakers, plinths and balloons. The interactive experience used an instrumental version of Elvis’ ‘Can’t Help Falling in Love’ slowed down by 50% to create a more ambient sound, we found that the slowness also helped to define the melody when sensing it through the vibrations in the balloon.

[The space——inside the balloon allows the vibrations to be felt.]

The concept was inspired by the Meditation Garden at Graceland. Designed for reflection and contemplation, Meditation Garden is the final space visitors enter on their tour of the Graceland Estate, a favourite place of Elvis’ and a spiritual experience for fans who make a pilgrimage here seeking connection with the star. We attempted to recreate the atmosphere of the meditation garden to create a ‘slow’ moment on the access tour as the rest of the exhibition was narrative and object rich. We aimed to create a space——between where people could reflect on the exhibition while enjoying Elvis’ music.

Figure 4. [Image description: These three images show installation views of the ‘Access Elvis’ sensory tour for BLV visitors at BAG. The images focus on design interventions consisting of black portable speakers, sitting on moulded grey plaster sculptures (as previously described), atop of wooden plinths with metallic silver and gold balloons underneath. In the background are artifacts from the Elvis exhibition including a cream colour glazed ceramic bust of Elvis, the white rusted metal Graceland letterbox and the red MG convertible used in the film ‘Blue Hawaii’. One image also shows the blurred movement of someone’s hands and leg as they walk into the camera frame.] Photographs: Jenna Hall



Based on observations in the gallery those who engaged with the interventions usually spent a minute or more exploring the sensations, some of the visitors who were fully blind seemed to spend a bit longer than others. They seemed more focussed and immersed than some of the low vision visitors, which raises questions about the effects of visual distractions on our ability to be fully engaged or immersed in multisensory experiences. Having similar responses from both BLV and general visitor groups suggests that the thoughtfulness put into the design process helped to slow people down in different ways. So, as well as making the exhibition more inclusive to BLV visitors we're also bringing this social awareness to visitors who haven't personally experienced living with a disability.

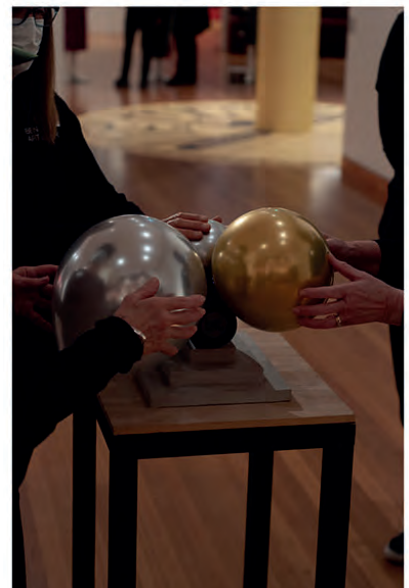
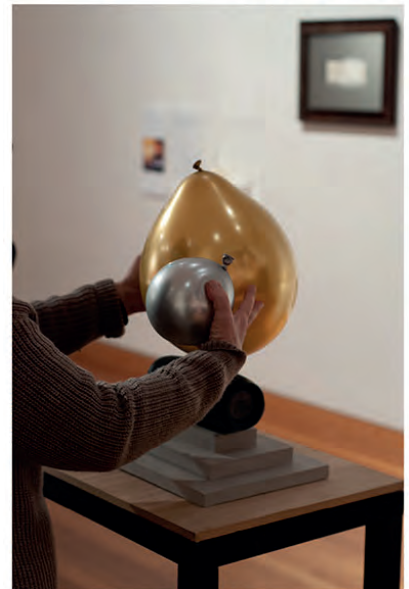
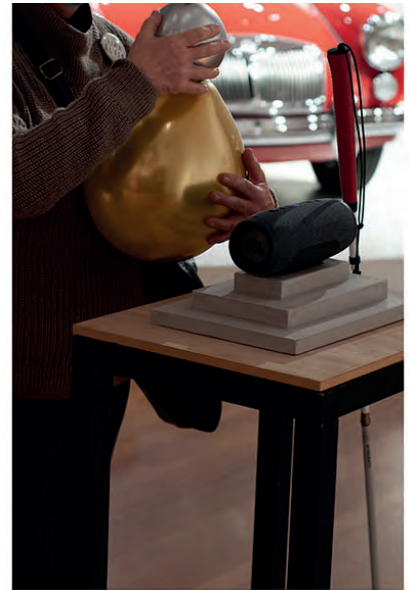


Figure 5. [Image description: These three images show BLV visitors engaging with the design interventions, they are holding gold and silver metallic balloons in front of portable speakers at different distances speakers to feel the vibrations of the sound. One image shows a visitor holding a balloon against their chest to experience the sound vibration through a different part of their body. Another image shows three visitors experiencing the work together, each holding a balloon near the speaker.] Photographs: Jenna Hall

6. EXIT THROUGH THE CAFÉ (DISCUSSION)

Reflecting on this museum experience, sensory experience and opportunities for slowness in design research and practice we begin to identify space—in the museum that has been un/intentionally been left blank, creating a void for BLV visitors as the visual dominates. We imagine how museum—space could be designed with greater intention as well as how through design we might open up—space that creates possibilities for different ways of engaging.

In embracing slower research and design processes we can begin to expose ‘blindspots’ in museums which prevent access to visitors with diverse needs. We begin to see how slowness as practice can help create space for thinking through complexities of inclusion by identifying augmenting the use of museum space, stripping back and creating space, rethinking how museum spaces—invite, welcome, include and care. Designing with the senses, for all senses is a slow and visceral process often escaping words. Contemplating sensation prompts the mind to wander abstract spaces—of memory and imagination evoking feelings of nostalgia and possibility.

7. FINAL REFLECTIONS IN THE MUSEUM GARDEN (CONCLUSION)

While this research is centred around designing for particular experiences, it doesn’t consider slowness to be an answer for everything, but rather part of diversifying the ways in which we engage with art and culture. I realise slowness may seem like a luxury to many designers and museum workers, but if we start to make—space for ‘slow’ gestures of listening deeply and designing with care in practice, perhaps museums can be of greater benefit to the wellbeing of both their staff and visitors. As the world grows heavier, we will need more places that can help us to recharge and restore ourselves, places to find inspiration and imagine new worlds. Public and community spaces such as museums already offer this solace to many, but there is much more to be done in making them more inviting and inclusive of everyone.

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SUPPORTING MUTUAL IMAGINATIONS THROUGH HUMAN-MATERIAL INTERACTIONS: A TOOLKIT AS FORM OF ACCESS

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ABSTRACT

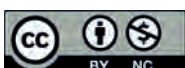
We introduce Mutual Imagination as a desirable outcome of Human-Material Interactions, proposing implications for the design of a toolkit that supports such activities. We aim to support Human-Material Interaction in an active, physical way, negotiating between learning foundational knowledge and supporting creative expression and imagination. The focus is set on process rather than finished objects, encouraging abstract reflection and the formulation of Mutual Imaginations emerging from a hands-on making activity. We report on the findings of a first case study utilizing the technology of dye-sensitized solar cells (DSSC), exemplarily probing the interconnection of knowledge, reflection, and making towards toolkits that can support Human-Material Interactions wide open to Imaginations.

INTRODUCTION

Through physical interaction, a person with their individual background and material with their given qualities and conditions form a relationship. This Human-Material Interaction can be described as materialized imagination formed by both, the person's and the material's perspectives and activities. (e.g., as

described by Lohmann, 2017). To consciously experience this relationship and learn from each other, questions arise which formats support these experiences particularly well and what specific qualities that expand from production-oriented goals may arise. To encourage such interactions, we aim at designing a self-standing activity kit leading a making process. The focus is set on materializing a physical conversation and formulate imaginations by person and material, instead of producing a functional, well-performing object. The toolkit aims to make Human-Material Interaction broadly accessible by detaching the process from instructing people and institutions. The technology of dye-sensitized solar cells (DSSC) is exemplarily chosen because it lends itself well to hands-on production and a wide range of experiments with both inorganic and organic materials. At the same time, this technology touches on informational as well as discursive topics and thus opens space for imaginations of futures that can be articulated during and through the manufacturing process. We understand this to be a valuable contribution to the fields of education, innovation, and participative planning in the area of design.

This paper describes the process of developing a toolkit through a practice-led research process. Based on this process we extract implications for the design of toolkits that aim at opening a space for imaginations through Human-Material Interaction. We start by introducing relevant areas of research we base our investigations on: Human-Material Interaction, Imagination, and Toolkits as Form of Access and follow with introducing DSSC. We describe the practice of designing a preliminary toolkit and holding workshops. Data collected during the design process as well as throughout the workshops are the basis for the analysis to formulate implications for the design of a toolkit for imaginations.



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BACKGROUND

We understand *Mutual Imaginations* as visual or conceptual representatives of Human-Material Interactions, results of activities formed from two sides: the background a person brings to the interaction and the conditions of a material that shape the interaction. To support this interaction a toolkit is proposed as a frame to provide a form of access (Fig.1). Below we introduce the key concepts that guide our work.

HUMAN-MATERIAL INTERACTION

Human-Material Interaction describes a person's physical engagement with a material, like touching, experiencing, forming, building, crafting, or making. This relationship is formed from at least two active sides – the person and the material itself. Schön (1983/2016) describes designing as a “conversation with the materials of a situation”, where the materials and movements of the designing person are a complex combination and sometimes deliver unintended results. These can be reflected and included in their form, the materials thus make an active contribution to what is created. A material can open up possibilities for certain actions and impede others, it can go along with interventions or hold back. Human-Material Interactions can be achieved through tangible physical access. While interacting, both sides influence and inform each other (Lohmann, 2017). Triggered by the material's influence, also abstract content can be conveyed. Giaccardi and Karana (2015) propose a similar concept, ‘Material Experience’, describing the experience people have with and through materials, which includes senses, opinions, and emotions. In addition to touching and exploring, ‘Material Tinkering’ describes an approach based on “creative, direct, and iterative experiments on materials”, which creates relationship and meaning (Parisi, Rognoli & Sonneveld, 2017).

New Materialism, with representatives such as Haraway and Barad, addresses human relations to technology, environment, and nature, overcoming a human-centered view. Barad (2007) emphasizes the difference between human-centered reflections and diffractions, where we acknowledge, that we are “intra-acting within and as part of” our surroundings. It is therefore more a matter of a relationship in which all those involved are effective than a one-sided intervention. A constant mutual influence that Haraway (2008) describes as “becoming is always becoming with—in a contact zone where the outcome, where who is in the world, is at stake”.

Direct, physical contact arises during making, which is why we continue to consider this activity as a starting point. Making is traditionally understood as output-oriented physical work (Ratto, 2011), whereas current

approaches see the potential of this Human-Material Interaction in the process itself: The focus lies more on practice and education rather than on an object as the outcome (Bogers & Chiappini, 2019).

Representatives of ‘Critical Making’ particularly consider social skills in addition to physical practice, such as “engagement with the world” by integrating critical thinking as part of physical activity (Ratto, 2011). In the field of education especially, making is “a strategy to train people to become active, responsible, and engaged citizens” (Cangiano, 2019). Bogers and Chiappini (2019) assigned Critical Making the task to “uncover injustice, highlight discrimination, and point to issues of power such as gender inequality, surveillance, racism, and human rights” and thus see the “potential of making for generating knowledge” and also “creating new critical perspectives”. We consider Human-Material Interaction to intersect Making and New Materialism, having the potential of critically questioning hierarchies and rethinking relationships. Considering the relationship between human and material and using reflective and hands-on approaches of Critical Making, our research proposes a first step to examine a mutually informing relationship with the material environment.

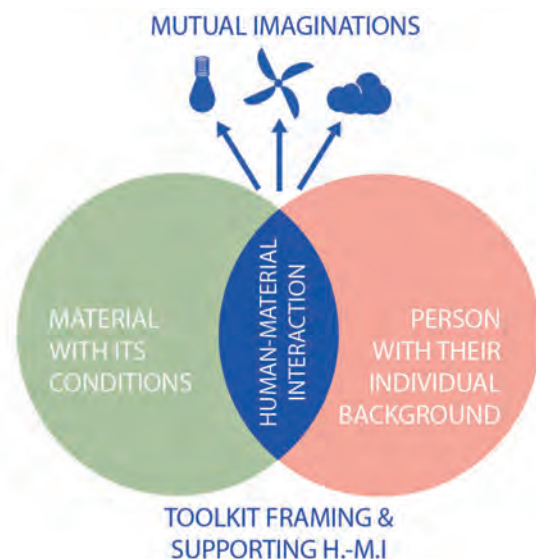


Fig. 1: A toolkit as a frame for Human-Material Interactions towards Mutual Imaginations.

IMAGINATIONS

The term ‘imagination’ describes a creation of the mind (Merriam-Webster, 2022). It can relate to the present or the future as well as something which doesn't necessarily exist. Since an imagination is a creation of one's mind, we assume it is from one's own perspective, representing the own perception, contrary to a probable future in a way that might be even scientifically justified, which for example is the case in design

practices like Speculative Design and Design Fiction. Speculative Design is a critical design approach by Dunne and Raby (2013), describing the speculation of futures and resulting objects, which are subjects for discursive reflections. The basis for speculative designs is usually critical social, technological, and environmental conditions and the consequences that may result from them. A similar approach is design fiction, which, like science fiction, is based on scientific knowledge and formulates the futures, but in a more practical, hands-on way (Sterling, 2005). Speculative Design, Design Fiction, and imaginations that arise from Human-Material Interaction have in common that they provide descriptions of the future. In contrast to imaginations, however, Speculative Design and Design Fiction have the intention of presenting future speculations and discursively formulating ideas from a human perspective, while imaginations result from Human-Material Interaction and represent collective thinking. These approaches are relevant to our research because they foster critical thinking and abstract visioning of futures. Still, they require some well-researched groundwork and much of the process happens at a conceptual stage, unlike a material-led process. There are toolkits fostering processes of Speculative Design and helping to reflect future scenarios which are mostly card or game-based (Iaconesi, 2019), while a material-led process is mostly not given. Moreover, the focus is a particularly human-centered reflection instead of a diffraction, a common emergence, that we strive for in our design. An imagination, in our definition, is a result of a diffraction, either a materialization or thoughts through Human-Material Interaction. There are no demands of probability, functionality, or good performance towards imaginations. The focus lies on the physical interaction where the backgrounds and conditions of both, material and human, can meet and where the material creates associations during the interaction. It is thus essential to not focus on a finalized concept or object but on the physical interaction. The form of an imagination can be fluid between materialization and an idea, both influencing and supporting each other. The question arises in what way physical interactions can support understanding and imaginations with reference to one's background.

TOOLKIT AS A FORM OF ACCESS

In her work "Department of Seaweed", Lohmann (2017) set up a workshop for co-creation with seaweed, an example of a participatory setting for Human-Material-Interaction, where values of New Materialism are conveyed. Access to this workshop though is greatly limited due to its fixed location in a museum, which also might address only people with a certain social background. Conceptual design practices, such as

Lohmann's work, however, are also viewed as problematic: Martins (2014) argues that those who practice for example Speculative Design largely come from the European, white, male middle class and thus only depict their own, already well-represented perspective. In any case, a broader accessibility must be created to hear more diverse wishes and fantasies from different perspectives.

To support creative thinking, Resnik et al. (2005) propose a guideline for tools. They suggest for example supporting exploration, to be diversely adaptable for different levels of expertise, supporting different options, offering changes in the process, to support collaborations, open interchange, and choosing black boxes carefully. This guideline shows the necessity to balance a clear and supportive structure and flexible openness at multiple layers. Camera and Karana (2018) also make clear proposals about what should be implemented in a toolkit. Driven by the concept of Material Experience, they developed a toolkit for designers to characterize materials. A toolkit should provide information for each individual area but also support with information towards and holistic understanding between different areas of the toolkit. It should provide "structure and vocabulary" without narrowing down the process's limited options of outcomes. The third aim is to keep it "agile, easy-to-learn and flexible", and complete it to inspire the users to implement such experiences in their design. To enable independence from instructors and spaces, a toolkit is proposed as a format we hope addresses identified requirements of accessibility.

DYE-SENSITIZED SOLAR CELLS

Dye-sensitized solar cells (DSSC) were developed in 1991 by Brian O'Regan and Michael Grätzel (1991). Similar to photosynthesis, sunlight triggers a photoelectric effect in plant colour molecules, releasing electrons that are fed into an electrical circuit in the cell. Only a few and mostly easily available materials are required to make a DSSC (Fig. 2):

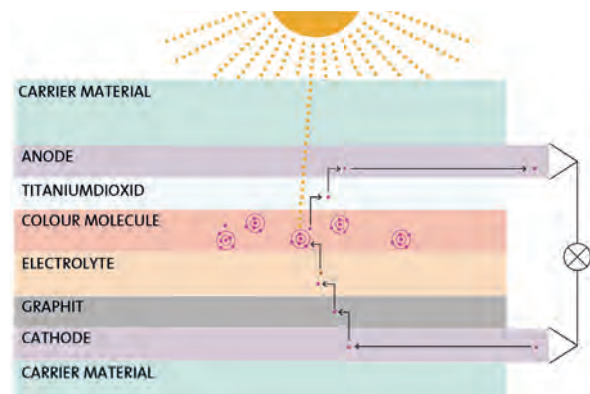


Fig. 2: Visualization of photoelectric effect within the layers of a DSSC

A transparent and conductive material, most commonly conductive glass or plastic foil, acts as an anode. It is coated with a thin layer of titanium dioxide. The crystalline surface of the titanium dioxide's surface can be enlarged by sintering. This happens most effectively when heated to 400°C. The dissolved plant colour molecules can then easily be deposited in the titanium dioxide layer and form the photoelectrode built up on the anode. Opposite of the photoelectrode, the layering is completed with a cathode. In common DSSC making instructions, it's recommended to use transparent and conductive glass as well, that is coated with graphite. The necessary property here is electrical conductivity, not transparency though. Photoelectrode and anode are connected by an electrolyte. DSSC combines biochemical processes with electrophysical conversion and usability. Furthermore, their production doesn't need a professional lab, but kitchen equipment while the necessary materials are mostly easily available. DSSC broach for example topics of energy gaining, usage of light sensors, botany and photosynthesis, social impact on energy policies, sustainability of organic and inorganic materials, and origins of materials. Therefore, we assume that DSSC represents a suitable technology to promote imaginations while manufacturing, if open-ended and reflected access to Human-Material Interactions can take place.

Researchers and teachers have explored DSSC technology to be communicated in the form of toolkits (Solaronix, 2022; Arbor Scientific, 2022), instructions (Schick, 2015; Harney, Toan & Rochford, 2011; Martineau, 2012), and classroom research reports (Dempsey et al, 2020). However, their focus was mostly set on using this technology in experimental school education in physics. Resulting, these formats usually lead to identical solar cells in the classic rectangular format of approx. 4 x 5 cm. No interdisciplinary or conceptual work was involved, nor were individual ideas encouraged and discussed. In accordance with the understanding of imaginations described above, our project's goal is not to produce a highly functional solar cell, but to foster imagination supported by abstraction, imaginative scaling, future thinking to, among others, critically study and explore the possibilities of solar energy and renewable energies. We're intending to shape a format, that triggers thoughts while using this technology. We see this approach being used primarily in the educational field, such as school or university settings that combine physical, creative and conceptual to speculative approaches. Since the points of contact with this technology are very diverse, it is an advantage if users have as different backgrounds and previous knowledge as possible. For individual, unguided use at home suggest a minimum age of 12-14 years for users.

METHOD

Haraway (1995) argues for the relevance of considering the positioning from which knowledge is generated due to the impossibility of generalizing objectivity. Including the perspective of the subject who generates knowledge is what she describes as situated knowledge. Acknowledging that knowledge is situated, we try to think along with our positioning during subjective knowledge generation from our practice-led design process. We aim to contribute insights from a design-led process where we explored the possibilities of the technology of DSSC towards identifying ways of transmitting this knowledge to other people via workshops and aimed to create a toolkit to support the users' process of knowledge gain. We understand transmitting knowledge in the sense of providing access to someone's perspective of a field of knowledge, from where individual connections may arise. This process is oriented on Barrett (2007), who sees the benefit of practice-based research precisely in the fact that knowledge is situated and new ways are found to externalize it. In addition, new contexts, for example with social or cultural reference, for the application of the generated knowledge results are revealed.

The kind of stories people imagine is based on individual experiences and backgrounds. We approach the design from a feminist standpoint, aiming to include different perspectives, opening the way for new design solutions. This can be realized by proposing approaches in which the designer takes the role of providing framework conditions, spaces, and tools (Buchmüller, 2013). The goal is to design a toolkit to detach the access of knowledge from the authors. Since the design of the toolkit will be based on our positioning, this personal situation must be reflected and considered in the design. To understand the usage and potential of the toolkit in its potential of supporting imaginations, and to take a critical look at our design, the use of the toolkit will consequently be evaluated with other people.

The process started with the first authors familiarization with the technology by manufacturing DSSC with varying materials and techniques to recognize challenges and limitations of DSSC. This Research through Design process was documented in an ongoing diary with entries for example comprising test protocols and reflections as well as observations on which tools supported the making process (pictured in Fig. 3). Based on these experiences, together with the insights gained from the literature research described above, a workshop setting was developed. Two pilot workshops were scheduled to probe the production of DSSC with participants and consequently design an improved workshop setting.





Fig.3: Collection of tools for DSSC making

The first author acted as the workshop leader at all three workshops. Data was collected through participatory observation, documented by notes from the first author, audio recordings, and photographs. The different data sets were analyzed by the first author using content structuring qualitative content analysis (Kuckartz & Rädiker, 2022). From this we aim at deducing implications for the design of a toolkit that supports imaginations. General aspects of the content of the entire data material were considered deductively-inductively, with a trial coding first taking place in preparation for the main coding. The initial main categories were deductively developed in reference to the literature research described in this paper. The spectrum of different positions within a deductive category revealed frictions that later enabled a differentiated view. Further categories were developed inductively from the data. This provided insight into the other relevant subject areas that should be included in the toolkit and helped identify a set of areas to consider in the toolkit design. These areas or categories were formulated neutrally and depict a range of negotiation and attitudes in a certain area, to which the toolkit design can react in different ways.

DATASETS

The qualitative content analysis was applied to three different data sets. The research diary, which traces the first author's process of experimenting with DSSC was chronologically created as the first data set. In the analysis, the autoethnographic notes are referenced with an "A". Online Research, Instructions, Accessibility of materials, choices of tools, and production steps, including process changes and experiments were documented as well as written notes of the first author's observations, reflections on the function of cells and suitability for a toolkit. These written notes were accompanied by photos and videos of the experimental setup and experimentation process.

The two pilot workshops were then held during a public art and technology festival. The presentation at the festival consisted of an exhibit describing the manufacturing process of DSSC and two pilot workshops, which took place at a large table with

materials and tools for making DSSC in the middle of the exhibition setting (Fig. 4).



Fig.4: DSSC workshop at public art and technology festival

In the beginning, a small printed instruction on the functionality and structure of DSSC was handed to every participant and explained by the workshop leader (see Fig.5). Next, the production was demonstrated once and workshop participants were then asked to produce their own solar cells with the materials and tools provided. Different conductive materials were provided as anode and cathode materials, while the plant pigments could be extracted from different types of vegetables and fruits. Tools from the kitchen, art, and laboratory contexts were provided. The eleven participants of the two pilot workshops (P1-P11) were visitors of the festival and previously registered for the workshop using an online form. Next to the data collection during and after the workshops, the first author took notes of conversations with visitors regarding the exhibit as well. The notes of participatory observations during the workshops as well as notes of conversations with three visitors (V1-V3) of the open exhibition setting formed the second data set.



Fig.5: Instruction on function and layering of DSSC.

Informed by the pilot workshops, the improved workshop was developed and carried out with four participants (P12-P15). This third workshop was held as part of a course at university. All four participants were master students in teacher training in design and technology. This third workshop differed from the first two workshops in two aspects: in the beginning, all participants were asked to take cards with areas of knowledge that they could relate to and present them to the group. In the end, question cards accompanied a reflection on the workshop and a more abstract consideration of the cells that have been created (Fig.6). While these two times of reflection were new to the workshop, the explanations and instructions stayed the same. The manufacturing process was demonstrated once. All participants then created their own DSSC. Audio transcripts and notes taken during this workshop made up the third set of data. The quotes given in the evaluation were translated into English.



Fig.6: Cards for reflection and imagination next to DSSC on workshop table.

While the research diary gives explicit insights into the access of materials, tools, and the testing of processes by the first author, the observations of the Workshops include reactions, interpersonal interactions, and individual approaches. The audio recordings finally document a precise impression of questions, expressed thoughts, and verbalized imaginations.

EVALUATION

The data were analyzed regarding the conditions under which imaginations arise. Guiding questions were: What are the preliminary stages of imaginations and what are appropriate forms of access?

Knowledge, Reflection, and Making were identified as the main categories. Knowledge coded diverse areas of knowledge such as function and layering of DSSC and facts which are necessary for their production. Reflection coded personal and thus individual classifications during the making process. In the category Making, the individual activities and decisions

of the person entering into a Human-Material Interaction were coded. During coding and analyzing, fluid transitions between the main categories became apparent, which are specified in more detail in the subcategories. In the following, cases are described that lie in the range of the three main categories and show approaches that can help to achieve these receptions. The subcategories are emphasized in the text.

PERSON, OBJEKT, PERSON

Information about which explanations and terms are used in connection with the *function, layering, and manufacturing of DSSC*, as well as the *material properties* centrally associated with it were identified. Some of these terms were unclear (e.g. P12: "What is agar-agar?") and were explained by other workshop participants. Furthermore, topics in *extended knowledge fields* of DSSC were brought up that are necessary to understand the technology. For example, P12 asked, "Is that actually the semiconductor principle that is shown there?". It was noted that knowledge in the extended field of technology is also important to not accidentally produce other chemical effects. A physics and design and technology teacher (V3) found that one of the cells worked even if you covered it from the light and pointed out that the cells are galvanic cells when composed of two different metals.

The material properties were introduced when the materials were presented, but at the time of use P15 no longer remembered how exactly they can be used (P15: "What could you use as a cathode again?"). In *collaborations*, people can explain these terms to each other and reduce insecurities. In particular, teaching *physical skills* works particularly well in direct collaboration. Here language and pointing hands did work together P14 and P15 exchanged on the fact that the electrolyte is squeezed out when they clamp the anode and cathode together. P15 also watched P14's cell and told him to be careful, that the crocodile clip has enough space at the edge.

These examples illustrate different forms of knowledge: Functions and properties are hard facts that must be retrieved during the process. Here, being dependent on one person is more of a disadvantage, since the information is tied to a point in time. But information as text or attached to an object can be accessed at any time. Physical skills behave differently, they are conveyed by an object, a person, and an interaction at the same time. The extended field of knowledge is also difficult to narrow down to be able to convey it in a generalized way. The individual background and reference of a person play a major role here. Different people address the topic from a wide variety of directions and broaden the extended field of knowledge.

KNOWING, NOT KNOWING

In addition to the base of knowledge that is necessary to be able to use a certain technology, *unknowingness* shows up as a friction point for experiments. There may be gaps between the introduced base of knowledge and the *individually existing knowledge* that reveal ambiguities and arouse curiosity (e.g., A: "If anode and cathode are placed on top of each other, a voltage is generated but no current. Is that possible? And why?"). However, these gaps can also contribute to frustration and demotivation: P6 made a plant dye from hibiscus flower tea and tried to thicken it with agar-agar. The attempt failed, the mass flaked and could not be applied on an anode. P6 was frustrated and didn't want to start over. She left the workshop. Meeting the right level of challenge hence seems to be an important aspect of maintaining curiosity and avoiding frustration. This too, however, cannot be generalized due to the different levels of knowledge of people, but also their personal attitude, ambition, and perseverance.

FUNCTION, NOT FUNCTION

P2 was initially accompanied by her father (V2), who was very focused on the functional output of the cells in terms of voltage and current "How much do you get out of that?". The answer that the voltage was usually around 0.5V did not satisfy him. He left the setting. P2 had a broad chemical and physical knowledge and quickly understood the function of the DSSC, but she did not build a DSSC herself either, but explained the function of DSSC to other participants and gave input complemented with physical and chemical considerations. Both V2 and P2 were very focused on *functionality*. There seemed to be no point for them in making a cell if its electrical output was too small to be used. P15, on the other hand, already emphasized his strong interest in solar energy and renewable energies at the beginning of the workshop. Testing the solar panels at the end of the workshop manifested his interest in the functionality of his result: "And how much do you get with no or little sunlight?", but he seemed particularly motivated by it: "If you really do it on a large scale, for example, if you say you really want to get more energy out of it, I find it interesting, how could that be implemented? How does it work?". Guided by the function of the DSSC, the interplay between dyes and energy output, P14 formulated imaginations: "I would find it exciting if, for example, clothing could be dyed with such a substance. Then it would be one big DSSC. That would really interest me" and "If you now think of parasols or something, if that couldn't be a large solar cell. That would be ingenious if that was possible."

Here, too, the participants' reactions show different attitudes toward the functionality of the technology. While some participants are motivated by this and

inspired to imagine, others deny an interaction due to the low output. The critical point here is the abstraction of the function. It is important to mention that the participants who succeed in abstracting the function and thus in imagining a technology that may be improved in the future, already have an education in design and technology, while we do not know the exact educational background of P1-P11. Nevertheless, we assume that the increased imaginations were based on the conscious connection of physical action and the guided reflection through the cards.

FINISHED, UNFINISHED

DSSC are able to provide an energy output but are also valuable to imaginations in an unfinished and non-functional stage. P1 was accompanied by his child (P3). To involve P3 in the manufacturing process, P1 decided not to make an entire DSSC, but to make cathodes together with P3. They immersed themselves in different shapes and materials of cathodes and later passed them on to other participants, who then could complete their cells. P14 was particularly interested in the blueberry, which was listed as the dye used in some unfinished cells the workshop leader showed in the beginning. He repeatedly brought up the topic of plants and dyes, for example by expressing interest in making jam, emphasis on the perception of smells, comparatively long consideration when choosing a type of fruit for his cell, the imagination of textile dyeing with plants and comment to P15 "Wow, that's a cool color came out at your cell!". *Partial processes* and *unfinished objects* offer physical points of contact and associations and contribute to imaginations.

ORDER, DISORDER

V1 recommended not to have too much disorder and different options of materials and tools on the worktables during the workshops. In accordance with the recommendations, a *selection of materials and tools* was prepared for use for the workshop, but the workshop leader made sure that only those tools and materials are on the table that can be associated with and integrated into the process directly and without much prior knowledge or preparation time. An area for tools, an area for materials and a large area with separate workspaces for each participant was prepared (see also Fig. 4). However, the participants all worked at the table on which the materials and tools were laid out, where they directly accessed and tried them out. It is possible that the previously created **order** already created a setting that was clear enough to work within. A selection of many different materials that are suitable for the production of DSSC proved to be particularly valuable for P13: "I have an idea! These conductive threads won't let go of me. What if you make a pattern inside and then pour the tomatoes on it?".

The availability of a big variety of materials, laid out in an orderly manner, seemed to create clarity and structure and to provide opportunities to connect and experiment freely at multiple layers. Scope for experimentation is necessary for finding one's interpretations of the technology, creating diverse physical outputs (see Fig. 7), and thus pursuing imaginations.



Fig. 7: A collection of finished and unfinished DSSC from the first author and workshop participants.

MATERIAL, VERBAL

P8 and P12 emphasized that *physical interaction* is what motivates them. P12 found the manufacturing process of the DSSC helpful in understanding the function which she had not understood after the explanation at the beginning. P8 reported that she was very interested in physical material interaction because she usually works at a desk a lot and was looking for varied activities. The physical interaction seemed to allow to create access in different ways, it motivates, helps to understand, and creates sensory perceptions and associations, for example, P12: "Smells good. Like cooking juice". These associations and physical triggers contributed to imaginations. Especially during and after the making process, they can also be encouraged by specific prompts, such as the question cards used in the third workshop. P14 talked about Imaginations of parasols and dyed textiles by answering a card with the question "In which huge/very small form would you like to make a DSSC?" while P15 reports from past projects on bio-materials answering the question "which Associations did you have during the process?". Here it can be observed that questions that were *concrete prompts* led more to an imagination than questions that were very broad and rather addressed reflections.

LEARNING, IMAGINING

Each person interacting with the materials and technology has an individual background and draws on a given level of knowledge. P9 told that she worked in a

tropical house and dealt with plant dyes, in particular by influencing the pH value to change colors. During the workshop, she also began to change the pH value of red cabbage, creating different colors from just one plant pigment (Fig.8). She was interested in finding out whether the coloring is relevant for the energy output or whether it only depends on the plant pigment itself. This specialization was possible due to her background and the interfaces that the technology offers. Other participants also found their *connections to the technology* and focused on very different aspects. In the second workshop, for example, P11 learned how an electric circuit is constructed, while P4 emphasized at the end of the workshop that she finally understood how resistance, current and voltage are measured with a multimeter. Approaching technologies and interacting with materials offers very individual potentials depending on a person's background.



Fig.8: P9 changing the color of red cabbage by adding citric acid on one half of her DSSC

DISCUSSION

The investigations show how rich imaginations, that are created through physical interaction can be. We consider imagination to be a valuable form of knowledge, with a peculiarity that it is tied to individual perspective and background, as well as to the situation and physical interaction. To support such imaginations, appropriate formats that guide knowledge, physical practice, and individual reflection are necessary. The analysis shows aspects that are useful for the design of

educational formats that are based on experimental physical interaction and want to promote imagination. These can also be relevant outside of DSSC or the form of the toolkit intended here.

The settings described here showed that the transition from the introduced foundational knowledge to imaginations is fluid. Imaginations build upon on a base of knowledge, the connection to existing knowledge, reactions, assessments, and associations but also materials, techniques, and tools, all anchored within the Human-Material Interactions. The authors regard this field of tension between the given basis of knowledge and imaginations as a spectrum with many intermediate levels as emerged as subcategories from the analysis of collected data. To provide access to these imaginations, access to all intermediate steps must be created. To foster imaginations through Human-Material Interaction, we have identified a participant's need to feel safe in their physical interactions. This means that the processes must be prepared understandably to not distract from a focus on imaginations.

A major shortcoming of a toolkit for the experimental manufacturing of DSSC may be the additionally needed direct interaction with a teaching person. While personal feedback holds the potential to create structure, motivation, exchange, and security, the absence of a need for a certain space, an institution, and people can also offer freedom, such as temporal independence, a safe space, or unobserved experiments and deepening, especially such as sensitively interacting with a material, instead of dominating it. The work presented here was originally based on the premise that the toolkit should be used independently. The authors see a great quality of a toolkit in the possible absence and independence of other people and thus a temporal and spatial separation, allowing for much wider accessibility. However, the process showed the quality of personal knowledge exchange, which led to highly individual discussions and results, fueled by the previous knowledge and background of the respective people. At this point it is unclear how the interactions would have taken place without a mentor, but it should be noted that advice and help was frequently sought and uncertainties were quickly dissipated. Acknowledging that not all forms of knowledge can be detached from a person, we suggest that a toolkit should support collaborations.

Workshops showed, that the “right amount” of challenges that need to be overcome is important to spark interest and at the same time not to be overwhelming. Different users' differing levels of expertise could be addressed by either defining a very narrow target group or considering different levels of difficulty within the toolkit. This also may help to contribute to long-lasting use, since the level of expertise increases with frequent use, and new

challenges can always be found. In general, the process should be appealing, but not too easy. Confusing materials and supposedly unsuitable tools arouse associations and encourage the participants to find new solutions or a new way of dealing with them. Similarly, gaps in knowledge arouse curiosity and encourage investigative questions

The ability to be able to abstract a function and to imagine that this function can have a different quality in the future or other contexts and therefore does not have to be regarded as static cannot be taken for granted. This connection needs to be introduced and guided. The quality of unfinished things to trigger ideas and conversations should be used and also actively integrated into the toolkit. Finally, we would like to emphasize that the entanglement of physical interaction and critical thinking should be supported by connecting them directly. This linking during the process can happen both spatially on the object and temporally. In this way, the mutual informing and influencing of the approaches can best be intertwined.

Connecting back to our goal of enabling imagination, we could observe imagination emerges through the interaction with a material with certain conditions and the individual background of a person. At different points in time in the process, the prior knowledge of a person is more present, while at times the peculiarities of a material are decisive. The intensity of the influence moves on a spectrum between material and interacting person. However, the imagination that comes from a person with their individual background based on a Human-Material Interaction can only be seen in relation to the material. Barad's concept of diffraction and Haraway's understanding of intra-action help to understand that new things are created through cooperation and networks, and that sole authorship can never be claimed. This resulting form of knowledge, of mutual understanding, is linked to the situation and the point in time and acknowledges the relevance of human and non-human voices. These concepts indicate that the influence is mutual and neither one nor the other perspective is presented, but something new emerges, a *Mutual Imagination* of participants and material, which we understand as a physical or conceptual form of intra-action.

However, it must be considered that the toolkit that frames the process and thus the interaction is designed from a human perspective. Thus, the interaction is always imposed from a human perspective and equal participation from both perspectives is only possible to a limited extent.

IMPLICATIONS FOR THE DESIGN OF A TOOLKIT FOR MUTUAL IMAGINATIONS

Based on our research process we identified the following key aspects towards creating a toolkit supporting Mutual Imaginations through Human-Material Interactions that have the potential to create access to different intermediate levels of imagination.

- Create a vocabulary with terms that are directly related to the technology and materials used but also anchor the topic in the extended field of knowledge.
- Enable collaborations between multiple people.
- Give information that creates a sufficient base of knowledge, but does not describe every detail explicitly. Leave space for individual interpretations.
- If possible, use pictures and drawings to overcome language barriers.
- Have a wide range of materials and tools ready, but create order within them.
- Label available materials with their properties and background information.
- Provide tools to examine and observe the material instead of direct manipulation only.
- Give unfinished objects a space within a collection or display area.
- Enable the execution of sub-processes and different levels of difficulty.
- Combine doing and thinking within a process step or tool where possible.
- Ask precise questions and provide concrete starting points for imaginations
- Choose technologies that are function-bound but introduce the idea of abstraction.
- Create irritations.
- Publish production files through Creative Commons licenses.

CONCLUSION AND AREAS OF FUTURE WORK

We presented implications for the design of a toolkit for Mutual Imagination inferred from workshops making DSSC. Proposed approaches are strongly linked to the direct interaction between people and the process. The setting differs if the toolkit is used without a workshop leader or even without collaboration. The toolkit which will result in our future work must therefore also be evaluated and the implications for design must be adjusted to reflect the aspects that arise from the actual setting. Based on the stated implications for design, a toolkit for DSSC will be developed and probed concerning its eventual support of Individual Imaginations. The extent to which Mutual Imaginations and Human-Material Interactions can be evaluated must be worked out in detail. Another step can be to find other suitable formats for Human-Material Interactions.

It would further be interesting to examine to what extent the implications differ when working with other technologies or which aspects can be generalized. Finally, it can be said that these observations and analyses can also lead to more abstract concepts and theory formation for example in the areas of design and technology education, innovation and participative planning in further steps beyond concrete implications for design.

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CULTIVATING ETHICS WITH PROFESSIONAL DESIGNERS

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ABSTRACT

Recent years have seen an increased interest in designers' ethical responsibility. However, knowledge concerning how ethical practice could be cultivated in real-life settings is still lacking. In order to explore this issue, we formed a team with practitioners at a digital design studio. During 10 months, the team co-designed activities and materials intended to sensitize design practitioners at the studio to ethics. Our findings highlight the importance of presenting ethics in an appealing manner in order to engage designers, and this paper illustrates how we explored this in our project. Moreover, we discuss co-design as a collaborative space for engaging design practitioners in the exploration and development of ethics that go beyond "tick-box exercises".

INTRODUCTION

This paper contributes to design research by providing methodological inspiration and practitioner-led examples of how to sensitize design practitioners to ethics through co-design. "Now is our moment to change the *practice* of design to improve the *ethics* of design" urges Shilton (2018) joining a body of scholars (e.g. Friedman et al., 2002; Vallor, 2018; Buolamwini,

2016) and practitioners (e.g. Kalbag & Balkan, 2017; Monteiro, 2019; Zou, 2021) calling for a more ethical design practice.

Bringing products and services into the world implies ethical responsibility (Eggink et al., 2022) and there is a growing conversation about the negative effects of technology design, addressing issues such as discrimination (Costanza-Chock, 2020), deception and manipulation (Brignull, 2010; Narayanan et al., 2020) and harassment (Ashktorab & Vitak, 2016; Naughton, 2018). Moreover, ethics is often "buried" in regulatory frameworks and administrative processes (Luján Escalante et al., 2022) and therefore often considered to stifle creativity (Eggink et al., 2022).

There is an abundance of "theoretically driven approaches" attempting to increase ethical design (Chivukula et al., 2019) but results and propositions from academia seem underused in practice (Norman, 2010; Colusso et al., 2017; Shilton, 2018). Several recent studies aim to bridge this research-practice gap by taking a practice-based perspective (Chivukula et al., 2019; Chivukula et al., 2020; Lindberg et al., 2020; Lindberg et al., 2021) through involving practitioners in research and exploring their life-worlds and practices related to ethics. Still, knowledge concerning *how advocates for ethical design would cultivate ethics in real-life practice* is lacking.

Aiming to reduce the aforementioned research/practice-gap and contribute to design research, the authors of this paper formed a partnership with a digital design studio in Sweden. Our partnership was in the form of a "cultivation team" consisting of three design practitioners from the studio and one researcher (the first author of this paper). During 10 months, the members of the cultivation team co-designed an



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inspirational talk, a survey and two Miro boards (www.miro.com), intended to sensitize design practitioners to ethics (Fig. 1). The team employed an open-ended, exploratory, learning-by-doing approach, and our focus was on the “fuzzy front-end” (Sanders & Stappers, 2008), meaning that the team was mainly focusing on raising awareness and interest in ethics, and on generating insights intended to inform further ethics cultivation at the studio. Cultivating a practice into developing and incorporating new ideals and repertoires takes time, and our project was the exploratory beginning of this journey.



ETHICS IN DESIGN

There is a tendency to think about ethics as only relevant in very narrow circumstances and related to regulatory frameworks and administrative processes (Luján Escalante et al., 2022). However, ethics is connected to everyday design work: the products and services we chose to design, who we design them for, and how we design them, affects individuals, communities and society, and should therefore also be considered from an ethical perspective.

Ethical considerations in design can refer to for example ethical concepts or principles related to what to design and the objects of design (Chan, 2018), methods and tools for ethical design (Vallor, 2018; Chivukula et al., 2019; Chivukula et al., 2021), unintended consequences of design (Parvin & Pollock, 2020), or the values of designers and design outcomes (Friedman et al., 2002; Shilton, 2013).

As researchers, we agree with a pragmatist approach to ethics, focusing on people’s practices rather than on theories, and on joint inquiry as a means to explore problems and develop solutions (Steen, 2011). Moreover, we draw from the concept of *ethos*, described by Frauenberger, Rauhala and Fitzpatrick (2016) as a “moral attitude that underlies a particular practice”. Ethos shapes actions, and actions shape the ethos in return (ibid.). This adheres to the view of ethics as a negotiation between individuals and groups, and being continuously in formation, which requires work: “debating, talking, listening, understanding, respecting and in many cases, troubling the status quo and being uncomfortable” (Walsh, 2007). This is something very different from the regulatory and admin approach to ethics, which is often manifested as codes of conduct, checklists, or consent forms.

Adhering to the pragmatist and participatory approach to ethics, the cultivation team members wanted to explore how we might support the increasing of ethically responsible design at the studio, based on the studio employees’ *own* understandings of what that might mean, and based on their ideas and ways of working (in contrast to employing any pre-defined ethical framework or academic standpoint).

CULTIVATING PRACTICE

In order to explore how advocates for ethical design would cultivate ethics in real-life practice, we have drawn from the concept of “cultivating communities of practice” (Wenger et al., 2002). Essentially, a community of practice (CoP) is a social structure – e.g. a group of design practitioners – that facilitates social learning and thinking together about real-life problems or hot topics (Pyrko et al., 2019). This means that CoP:s provide contexts for professionals to help each other

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learn. Over time, community members develop shared values as well as shared repertoires of e.g. methods and skills (Li et al., 2009). A CoP usually consists of a core of people who lead the CoP, as well as domain experts, novices, and everything in between (Wenger et al., 2002). A *domain*, in the CoP terminology, is a domain of knowledge, i.e. a topic of interest that creates a common ground and a sense of common identity. This is one of the three elements of a CoP (ibid.). The next is *community*, which refers to the people who create the social fabric of learning and development. Third, there is the shared *practice* that the people are developing in order to excel in their domain. CoP:s live in “landscapes of practices”, and people often belong to multiple ones (Fig. 2) (Wenger-Trayner et al., 2014).



Figure 2: A workplace can be a CoP and can contain several CoP:s, related to other CoP:s. People usually belong to multiple ones.

Cultivation, in this context, means to influence and support communities so that they can prosper and achieve their full potential. Wenger et al. (2002) compare this to the cultivation of plants: “[...] you can do much to encourage healthy plants: till the soil, ensure they have enough nutrients, supply water, secure the right amount of sun exposure, and protect them from pests and weeds.” In our project, cultivation meant to co-design activities and materials adapted to the CoP at hand (the design studio) intended to sensitize design practitioners to ethics and increase ethical practices.

CO-DESIGNING ETHICS CULTIVATION

The notion of cultivation as described above, as well as the notion of joint inquiry, also described above, are in accord with co-design, emphasizing the importance of involving the people concerned and learning and becoming together. Since our research and project aim was to explore how to enable ethics cultivation, co-design was deemed a suitable approach. First, since co-designing can function as collaborative “sites of exploration, experimentation and transformation” (Salmi & Mattelmäki, 2021) as they invite stakeholders to participate in a design process as information providers, creative minds, and/or evaluators of new ideas (Sanders & Stappers, 2008; Mattelmäki & Visser, 2011). Second, since co-designing is how many design practitioners are already used to working as they collaborate in teams with each other, users, and other stakeholders, building solutions together, thus making

this approach familiar and comfortable to them. Third, since involving the people concerned to develop solutions can make the solutions better, and has democratic purposes – designing *with* people instead of *for* them. Fourth, since involving the people concerned might help develop realistic expectations (Bjerknes & Bratteteig, 1995).

OUR PROJECT AND DATA

Our project supported different goals for the different members of the cultivation team. The design studio part sought to build knowledge of how to sensitize design practitioners at the studio to ethics, and to also increase ethical practices to some extent. The researcher part of the team aimed to contribute to design research by considering this project as a “research program” (Binder & Redstrom, 2006) – employing a set of “explorations” in order to pursue our research interest.

RESEARCH CONTEXT

The first author of this paper is a design researcher with past professional experience from design industry. Her former colleague Jenny (pseudonym) is now a customer experience/user experience manager and designer at a design studio. Jenny’s stance is that design studios (her workplace included) need to take increased ethical responsibility for what they unleash into the world, and that this perspective needs a push in order to spread. This provided an opening for us researchers to study the cultivation of ethics in design practice, together with practitioners in a real-life setting. This setting was a design studio with its main sites in Sweden. The studio is a consultancy that designs and innovates digital products and services. The majority of the 80 employees go under the umbrella term of “creatives” and are designers (e.g. UX, industrial, and product designers) or engineers (e.g. software, mechanical, and electronic engineers). In early conversations exploring the preconditions for our project, the researchers were told that “ethics” is not a commonly used term at the studio, but that they have discussed ethical aspects of their work, such as sustainable sourcing of materials, and that they have decided to decline assignments from clients they deem unethical, such as tobacco companies.

THE CULTIVATION TEAM

Jenny (the design practitioner initiating this project, introduced above) and the first author of this paper established a tiny team of two to start things off. Jenny then invited two of her colleagues to join, since she wanted additional perspectives from the studio as well as more “hands” to participate in the ideating, planning, implementation and analysis throughout the project. The four of us formed a “cultivation team” consisting of three design studio employees and the first author of this paper (Table 1). The project had management



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support, but no pre-defined deliverables were expected. The team was given freedom to explore as we saw fit, aligning with the studio’s core values of empowering and trusting employees.

Table 1: Cultivation team members

Title/role	Pseudon
Communications and marketing mar	Zelda

From the researcher’s point of view, the joint team was a way to gain insight of everyday life and values at the studio, an important prerequisite for successful co-design. The joint team was also important since Covid-19 pandemic restrictions made it impossible to visit the design studio. From the design studio’s point of view, the collaboration provided an opportunity to join arms with design researchers and to build knowledge of ethics and ethics cultivation at the studio.

The team co-designed activities and materials intended to sensitize the studio creatives outside of the team to ethics. The studio creatives outside of the team provided their understandings, preferences and ideas for ethics cultivation through the activities/materials created by the cultivation team. In that sense, they were also co-designing ethics cultivation, but on another level (Fig. 3). Informed consent was obtained from all participants; each activity was accessed by the participants through a webpage explaining purpose, data collection, etc.

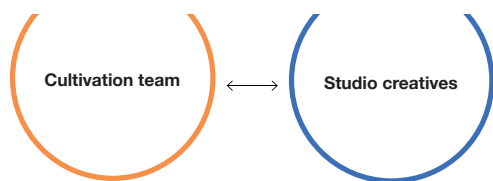


Figure 3: Participants

THE CULTIVATION TEAM’S CO-DESIGN PROCESS

In the beginning of our collaboration, Jenny and the first author of this paper were a “core team”, designing and facilitating workshops and meetings and drafting ideas for the rest of the team to evaluate and build on. As the four of us got to know each other better over time, the division between core team and the rest dissolved. Ideas flowed freely among all team members during our co-design sessions, as well as in-between, building upon one another. Even though the research goal was to explore how to sensitize design practitioners to ethics, it

was important to the authors of this paper that the collaboration should be mutually beneficial, and that the studio employees should not feel like research objects that were being studied by academics. An important measure taken for this was to make joint decisions in the team, the aim being that everything we did should provide value to everyone involved. Since Jenny and the first author have previously worked together at a design studio, their shared experiences, terminology and skills blurred the lines between researcher and practitioners, at least to some extent. Furthermore, our team did not have explicit roles assigned; we regarded each team member as an expert in their own right.

DATA GENERATION AND COLLECTION

We used video for meetings (Zoom and Teams), chat in-between meetings (Slack), and an online whiteboard (Miro) and document (Google Docs) for exploring ideas and for documentation. The team had 1-2 hour work sessions 1-2 times/week during part 1 and 2 (Fig. 1) and also worked in-between meetings (with e.g. survey design). Co-design sessions were usually structured around a question, for example “How might we cultivate ethics in design at the design studio?”. In those sessions, the main method for team idea generation was brain-storming in the form of individual idea generation (Table 2), presenting to the team, and then evaluating and deciding together, building on each other’s ideas.

Table 2: Example data from team brainstorm session on “How might we cultivate ethics in design at the design studio?”.

Purpose of collaboration and cultivation	To cultivate ethical design practices To build knowledge and capacities within [design studio name]
Some existing idea formats	Workshop sessions for developing ideas Future sessions e.g. speculative scenarios, role play, visualisations, stories etc to explore possible futures of design ethics in practice Inspirational and educational exercises, introducing ideas such as situated knowledge, core ethics perspectives on
Ideation area	Ask clients what their main interests are and use these as topics. Anonymity caters to more honest feedback. Power sessions, 20-30 minutes. Most work done on own time.

In addition to co-design sessions, we also had meetings to assess how the activities and materials that we had created had panned out (Fig.1). For example, after the inspirational talk, the cultivation team met and discussed feedback and reactions from employees who had attended the talk.

The collaboration was initiated in May 2021 and finished in March 2022. Not counting the holiday months, it spanned ten months. Data was collected throughout the project.

The cultivation team's co-design of the inspirational talk was documented through meeting notes and Keynote slides. The cultivations team's co-design of the survey and Miro boards was documented through our team chat, meeting notes, Miro sketches/mock-ups and our shared planning document (a continuously updated collection of brainstorm, decisions, schedules, documentation, links to sketches and mock-ups, and important ideas and discussions). The studio creatives' contributions were documented through their participation in the survey and boards.

The survey platform logged the number of participants (15), while Miro did not. The survey and Miro boards are attached in appendix A.

In addition, research notes reflecting on the process were continuously taken by the first author of this paper, noting rich and significant quotes and moments "worthy of attention" (Saldaña, 2015) such as what the studio team members had reported as important, and topics or situations that had provoked strong reactions.

THE INSPIRATIONAL TALK

The team's first activity for engaging the creatives at the studio was to provide an inspirational talk. The studio has 1-hour sessions 1-2 times per month for skill development and inspiration, and the team decided to use one of these sessions for a talk on ethics in design. Jenny reached out to some colleagues through the company chat asking for related points of interest to them, receiving suggestions such as "gender, race, identity, and big data".

The talk (approximately 1 hour) took its point of departure in the first author's previous research on ethics in design practice, connected to issues suggested by Jenny's colleagues, presented examples of harm caused by design, discussed some reasons for ethically harmful design, and suggested a number of ethics-focused methods and tools.

The talk ended with a workshop invitation for further ethics explorations. However, no-one signed up. The team decided to pause the project in order to allow some time for reflection. Summer holidays were also approaching – autumn could provide a fresh start.

SURVEY AND MIRO BOARDS

After the summer break, the team reflected on the unexpected lack of interest. We had to "reframe" the situation (Schön, 1994). Ruby suggested that workshops might be too much of a commitment, and that smaller asynchronous events might make it possible for more people to engage. This "bite sizing" idea was also based on the notion that ethics is a large topic, and that smaller chunks could make it clearer and also lower the threshold to participation. The team decided to proceed with Ruby's idea, which would be a way to "think big, start small, learn fast" (Mui, 2019).

"It needs to be entertaining to reel them in" Ruby stated, highlighting that for the creatives at the studio to even notice our ethics bites, they needed to stand out. Moreover, despite having management support, our project had to be done alongside the regular studio work, meaning that the bites had to be quick to interact with. We also deemed that anonymity would cater to more honest responses and did therefore not collect data about the participants. The team decided to create "ethics bites" (short activities on ethics) that should be:

- Raising awareness of ethics in design
- Attention-grabbing through interesting topics and engaging formats, visual style, and language
- Entertaining
- Quick and easy to interact with
- Anonymous
- Asynchronous
- Creating knowledge about ethics and ethics cultivation (in the team and at the studio in general)
- Inviting creatives at the studio to share their understandings, preferences and ideas for ethics cultivation, thus creating knowledge in the team useful for further cultivation

We wanted to try different formats (e.g. survey, Miro boards, speculative scenarios, individual reflection, "open" reflection) and topics (e.g. ethics as responsibilities or ethics connected to the design process) to learn what would work, adhering to our learning-by-doing approach. We also thought that a variety of formats would be more fun for the participants.

The team started thinking about the project as a campaign and that we needed to brand ethics in order to make it attractive, and to connect the different bites. Ruby (UX researcher) and Zelda (marketing and communications manager) formulated a campaign name, "Beyond Good & Evil", as a way to talk about ethics without mentioning "ethics", because (as expressed by Ruby) "ethics is often viewed as boring". Jenny (CX/UX designer and manager) involved a visual



Practices] __ [Bodies

designer colleague to provide graphic assets. Ruby provided the copy. The style was intended to be attention-grabbing, relatable, and fun, and connected to the studio rather than to the university (Fig. 4).

Originally, six bites were planned to be launched once a week over nine weeks, ending with a student competition-hackathon-grand finale. The weekly drops were intended to stimulate curiosity, avoid overwhelming potential participants, and provide opportunities for the team to change the next bite as we learned what had worked and not. For introducing the campaign and bites, Jenny set up a studio chat channel for our project and prepared slides for the weekly studio Monday meetings. These meetings address e.g. new clients and gather all employees. Each Monday meeting, the “ethics bite of the week” would be presented, and Jenny would send an invitation in the chat channel, inviting everyone to participate.

However, it had been time-consuming to create the ethics bites, and our team wanted to deliver something that was up to studio standards. “Hard to package & deliver something that excites people when we’re already on stuff 100%”, Ruby wrote in our team chat, highlighting the struggle. It was now almost November, and the end of year was closing in fast. We decided to do three bites and then assess and discuss how to move forward:

1. *How I think about ethics in my work*: A survey exploring creatives’ understanding of “ethics”, what they deemed important for increasing ethical design, and what ethical responsibility might mean.
2. *How we (should) work with ethics*: A Miro board capturing ideas on existing materials and practices, as well as for new materials and practices, deemed useful for increasing ethics in design (Fig. 4).
3. *Darkness – When in the design process does s**t hit the fan?* A Miro board for mapping out real or potential ethical “breakdowns” in studio design projects, and for conceiving ways to mend or avoid the breakdowns (Fig. 4).

ANALYTICAL PROCEDURES

Following standard practice in participatory design (Bratteteig & Wagner, 2016), analysis was conducted during as well as after.

During: The cultivation team met after each “bite” to reflect and assess, in accord with our exploratory approach. We met online for 1-2 hours, discussing: What insights did we get? Should we change the next activity or material? Decisions were documented in our planning document.



After: The cultivation team met twice (Fig. 1, part 3) by the end of our project, to reflect on the collaborative process and on the outcomes from the talk, survey and boards. The meetings were approximately 1 hour long and conducted through video conference. We discussed initial expectations, reflected on the collaboration and project outcomes, and came up with ideas for future ethics cultivation efforts. For analyzing the project and writing this paper, all documentation was also systematically read and discussed by the authors of this paper, conducting an inductive qualitative analysis: close reading of texts, looking for answers to our research question (“evaluation objective”), coding, creating categories, and refining and revising codes and categories (Thomas, 2006). Moreover, a draft of this paper was shared with the studio part of the team, and their feedback was collected.

FINDINGS

Our findings are structured into two parts. The first part focuses on the outcomes from the survey and Miro boards that were co-designed by the cultivation team. The second part presents reflections on the process, highlighting insights and conclusions from the cultivation team based on the team’s two final meetings.

OUTCOMES – CREATIVES’ CONTRIBUTIONS

The ideas and suggestions generated and collected through our survey and boards touched upon concrete practices, such as tools and methods, as well as more intangible aspects, such as “culture” and “mindsets”. These insights are useful for future cultivation efforts as they reveal creative’s ideas and perceptions. For example, practitioners’ understanding of “ethics” is useful for framing and communicating cultivation activities, and the insight that “battle of egos” can cause ethical issues to fall under the radar implies that cultivators need to also consider how team culture affects ethical conduct.

Moreover, our findings show the kinds of insights that this project was able to produce. Our survey and boards were designed to be quick to interact with, which also generated “quick ideas”. Returning to the cultivation metaphor: they are “seeds” that need tending to in order to develop and grow.

The definition of ethics: “Ethics” was described as means to navigate between good and bad. It was also described as preventing unintended harmful consequences, respecting human values, and doing good for people and the world at large. Moreover, as an attitude or a mindset: to have good intentions, and to take responsibility for what and how to design.

Education is key: Ethics education/training was ranked the most important activity for increasing ethics in design. Moreover, participants suggested that education

should connect ethics to workplace practices in order to make the topic graspable. That education can come in many forms was also evident: informal knowledge sharing as well as learning-by-doing were noted in addition to more traditional formats such as lectures.

Ethical mindset: Ethical responsibility was considered a mindset that should permeate the design process. Talking about “what is expected from me” was an important way of achieving this mindset, and examples of taking ethical responsibility were to e.g. choose ethical clients, and to consider ethical impacts of projects (“Don’t only answer to the design brief”). Taking ethical responsibility was connected to raising one’s voice, for instance: “Be critical and raise concerns”, and “If not me, who?”, emphasizing that ethical design requires individual bravery and integrity.

Tools and methods for ethics: Using tools for ethical design was another theme, an example being to agree on “the ethical lens” in the beginning of a design project and using that lens as a metric. Another suggestion was to do the opposite: to define in the beginning of a project “things that are unethical that you specifically want to fight against in your work”. Checklists, codes of ethics, and employee onboarding were suggested documents that are familiar at the studio and that could incorporate ethical aspects of and for design. Creating “ethics starter packs” related to common activities, such as UX research, was also suggested, as was ethics-focused client reviews. Another idea was to introduce brainstorming on bad things that might happen. Ethical best practice/worst practice might help creatives envision what to aim for as well as what to avoid. Declaring the studio’s ethical stance was also mentioned, this might affect ways of working and thinking, and attract different (more ethical?) clients and partners. Establishing “culture retrospectives” to investigate what employees were happy/unhappy about with the culture was also a suggestion, connecting well-being and happiness at work to “ethics”. Additionally, a suggestion was made to establish a discussion panel that could specifically address the “ethical touchpoints that appear in our daily work”.

Folding in ethics into the design process: Before a project, responses suggested to identify ethical goals/aims (in addition to other goals/aims that a project typically has) that can be tracked and evaluated. One participant highlighted that during a project, the work culture affects what could be discussed and not. This can undoubtedly be a problem for all sensitive topics, ethics not excluded. Losing sight of ethical dimensions due to e.g. stuff coming in from the side or “battle of egos” (described also as “no, my idea is better”) was another problem. At the end of projects, retrospectives are often held in order to reflect and learn. A question/suggestion noted related to this was: “Do these include ethics? Or just client satisfaction?”.



PROCESS – GROUNDING THE CULTIVATION

The team had two meetings for “zooming out”, wrapping up and looking ahead (Fig 1, part 3). The team assessed the project with a focus on the process, and discussed what could have been done differently as well as ideas for moving forward. The insights below cover the main conclusions drawn by the team.

Defining purpose and aligning expectations: Our approach to this project had been learning-by-doing. Still, at our closing meetings, Zelda and Jenny felt that the number of participants had been too low and the results had been too shallow. Ruby, on the other hand, was rather happy with the number of participants as well as the outcomes. This expectation misalignment revealed that we should have discussed expectations and follow-up more, despite the open-ended approach.

Preparing the work: Chatting more informally – e.g. “20 minute coffees” – to different people in the organization could have helped spread awareness of and excitement for our project, expanded the network of individuals interested in the ethics of design, and provided the team with more opportunities to learn about e.g. experiences and examples to build the ethics bites on.

Connect with allies: Moving forward, the ethics cultivation team could connect with more people in the organization, e.g. team leads, who could influence their colleagues and get more people on board.

You don't have to be an expert: Zelda's impression was that many colleagues had wanted to participate in the ethics bites, but also wanted to be really thorough when doing so. They are used to taking on the expert role, and might not have realised that even unpolished ideas would be appreciated in our project. We drew the conclusion that moving forward it would important to emphasize that all participation is appreciated, even non-expert and incomplete ideas.

Ethics is a group effort: We had created the bites for individual and anonymous participation. Even though this idea, at least on paper, would require less time and effort than e.g. workshops, workshops might still have been more attractive due to the social aspect. Perhaps mixing anonymous and open bites would have been better too. This project also made it clear to us that Miro boards might work best in group sessions, and be less suitable for individual, unfacilitated work.

Pace and size matter: The team had thought that launching ethics bites once a week over a period of time would allow employees who did not have the time one week to be able to participate the next. Smaller bites might also feel like less work. However, in hindsight, the team thought that fewer, bigger bites might have stood out more, catching people's attention, and felt

more like a fun “happening”. Bigger bites would, however, require more resources.

Attention and energy are scarce resources: “We've undergone a lot of change”, said Zelda, realizing in hindsight that the pandemic had affected everyone's energy levels, that the studio had been through a merger that had taken a lot of work and stirred emotions, and that other company activities had competed with the ethics bites over participants' attention. For future cultivation, a more thorough scanning of competing events could provide better timing. There might never come a perfect time (the studio is always busy) but a better scanning might at least provide better preconditions.

Connect it to a familiar topic: Jenny suggested that connecting ethics to sustainability – perhaps even framing ethics as “digital sustainability” – might make it more familiar and thus more compelling to her colleagues at the studio. A related idea was to connect ethics to business. The studio exists in the realm of business, as they are consultants, and employees are evaluated on billable time since this is how the studio makes money. Therefore, “ethics related to brand equity” (as Zelda put it) might stimulate engagement in ethics. In short, talking about ethics as e.g. “good for business” could resonate with practitioners, managers, and clients, making time spent on ethical deliberations make sense as well as being easier to bill.

Integrate ethics into design studio practice: The team deemed that instead of introducing ethics on top of what people are already doing at the studio, it might be more efficient and smoother to use what is already familiar as points of departure for ethics. For example, Zelda suggested introducing ethics as a topic when onboarding new employees (onboarding is a practice already in use). Another idea was to use personal development plans (a common practice at the studio, containing e.g. skills to improve). By adding ethics education in such a plan, time spent on learning about ethics would be “allowed”. Providing dedicated time for ethics cultivation (hours per week) was a related suggestion. The studio could also offer design ethics training, making it easily accessible to employees and framing it as encouraged by the studio. Adding an ethical stance in communication (e.g. in slides used to present the studio at clients etc) was another idea. Discussing design examples from an ethics perspective was another suggestion – just as designs are already discussed for inspiration and learning in regards to e.g. interaction design. Adding methods for ethical design (e.g. “the evil persona”) in the internal studio toolbox was another idea. Lastly, creating a “hub” for ethics at the studio (e.g. a resource repository) might provide a helpful starting point and package the topic as something that the studio encourages employees to engage in.

CONCLUDING DISCUSSION

In this paper, we have provided an account of how a joint team of design practitioners and a researcher attempted to sensitize designers to ethics. We followed the initiative of a design practitioner, formed a cultivation team, and co-designed an inspirational talk as well as an ethics campaign with a name, graphic design, and tone of voice intended to package ethics attractively and connect a number of activities also co-designed by the team: a survey and two Miro boards. From this project, we have presented the process, outcomes, and potential ways forward.

CO-DESIGN AS A METHOD FOR ETHICS CULTIVATION

The aim of this project was to sensitize design practitioners to ethics, and to do this with designers in real-life practice. We suggest that our project, employing co-design as a method for ethics cultivation, can serve as an exemplar for future ethics cultivators, for the following four reasons.

First, co-design is familiar to most designers, and familiar approaches are comfortable. Dealing with ethics is complex, and ethics is also a rather novel dimension to consider for many design practitioners. Moreover, ethics can often be deemed as “not-my-domain” (Luján Escalante et al., 2022). These issues can make engagement in ethics feel both daunting and uncomfortable, and lead to reluctance to engage. In addition, in many professional and social settings, there is the fear of being “exposed” or “getting it wrong” (McEntee, 2021). Using a familiar approach that many practitioners also like, might mitigate uncomfortable feelings and reluctance to engage, at least to some extent.

Second, co-design allows design practitioners to talk about ethics in terms decided by *them* and of aspects and problems that *they* relate to, instead of having to adapt to terms, aspects, and problems prescribed by others – which might be hard to relate to or even understand. We argue that for design practitioners to engage in ethics, ethics needs to relate to issues that practitioners understand and consider to be important, and co-design is a way of making visible and naming these issues. Co-design can also disclose assumptions, attitudes and language used in a CoP when dealing with ethics-related matters. This is useful for framing ethics in design in attractive ways. How we name and frame things affects our understanding and our actions (Tversky & Kahneman, 1986). For example, talking about “human enhancement” as either “fuel” or “steroids” affects how positive people are towards it; “fuel” makes it sound better, while “steroids” can make it seem less appealing (Dinh et al., 2020). In an early co-design session in the cultivation team, we realized that

studio practitioners deemed ethics to be “boring” and that this could be a blocker to engage. This insight led the team to explore approaches and designs intended to counteract this perception. For instance, we avoided the term “ethics” in the campaign name, used eye-catching and fun graphic design, and employed participatory and exploratory formats to stimulate sharing of ideas and suggestions.

Third, co-designing ethics in design can be a kick-start for cultivating a CoP around the topic, since co-design creates space to start engaging. Moreover, introducing, providing and promoting co-design spaces for engaging in ethical design creates awareness. If the awareness is raised in a suitable manner (framed correctly) this might lead to interest and engagement and a more long-term commitment to keep exploring and learning. CoP:s that focus on the domain of ethics in design would be able to develop situated understandings and approaches over time, adapting to the issues that arise.

Fourth, co-design can promote active and creative engagement, suggested to be foundational for handling ethics in practice as it involves personal experience and emotions and not only logic, which is important for meaning-making and the creation of ways forward (Luján Escalante et al., 2022; Steen, 2011). Moreover, co-design fits with the designerly approach of exploring problems and solutions simultaneously (Cross, 2006). This means that co-design approaches can provide an epistemologically sound space for the co-design of ethics, that also fits well with how design practitioners normally work.

However, one size does not fit all. Cultivators need to attempt to judge/decide which approach(es) that will suit their context best, for instance what aspects of ethics that the different “audiences” will understand and find engaging, and which pace, size, format, graphic design etc that will appeal to them. The members of the cultivation team, and their position and power in the organization, also needs to be considered.

SUMMARY OF PRACTICE-LED IDEAS FOR CULTIVATING ETHICS IN DESIGN

Throughout our project, practitioners in and outside of the team suggested practices that they deemed useful for the cultivation of ethics in design, for example arranging ethics hackathons and ethics training, and setting goals for ethics in design projects. These ideas are already noted above, but to improve their accessibility, the first author has compiled them into a small idea bank, attached as appendix B.

The compilation process went as follows: After the project, ideas from team meetings, survey and boards were noted onto digital sticky notes. These notes were then organized into an affinity diagram, and clarifying rubrics were added: *Raise awareness & create an*



interest in ethics in design, Increase knowledge about ethics in design, and Implement standard practices for ethics in design.

The contents of the idea bank also tell us something about how design practitioners consider ethics cultivation: that it needs to be attractive. In this case, “attractive” means to make sense logically, evoke positive emotions, be concrete, and fit with practice.

ETHICS VS BUSINESS-AS-USUAL DESIGN

Our project generated insights regarding ethics cultivation in a design studio setting. However, as mentioned above, parts of the cultivation team had hoped for a higher number of participants, and more suggestions and ideas from the survey and Miro boards. While there may have been several reasons for the (arguably) low participation and engagement, we wish to draw attention to one specific reason, namely the following: the main driving force in design industry is profit rather than positive impact. Therefore, even though management did support our project, there was more to gain for our participants by doing “normal design work” and showing more billable hours than by participating in the ethics bites. Doing “normal design work” is most often what designers are supposed to be doing at work.

A way to address this issue and engage more employees moving forward was suggested by Zelda: talking about ethics related to “brand equity”. This frames ethics in design both as a business opportunity, such as leveraging ethically responsible design to differentiate from competitors, and a risk management strategy, such as using ethically responsible design to avoid potential lawsuits or negative press. In the larger design industry CoP, as well as at the design studio at hand, these reasonings make sense. Connecting ethics to how it affects the business aligns with a “business-as-usual design” logic where profit comes first and ethical considerations are not always in the forefront (Wizinsky, 2022). However, since “business-as-usual design” logic has shown to sometimes lead to rather horrible consequences (discrimination, harassment etc, as mentioned in the introduction of this paper) there are reasons to question this paradigm. We suggest that co-design could be a useful method to do so.

CO-DESIGN AS A (BLANK) SPACE FOR CULTIVATING ETHICS IN DESIGN

Reflection and learning in design practice has been discussed in-depth as e.g. reflection-in-action and reflection-on-action (Schön, 1994). Another approach, more tightly connected to the concept of communities of practice, is as “rehearsal spaces” where CoP members can “rehearse” (like an orchestra before a concert) without fear of losing face in front of clients, and

without having to consider budgets, timelines and other day-to-day business requirements (McEntee, 2021).

We wish to build on this, and suggest that co-design, understood as a collaborative space (or “lab”, “jam”, “circle”, “inquiry” etc), is a viable way forward for increasing ethical design practices. Furthermore, and importantly, that this space needs to be “blanked out” from “business-as-usual design” rationalities such as budgets, timelines, billable hours etc in order to make room for imagination, brave attempts at challenging the current paradigm, and collaborative explorations of what might be instead. By intentionally setting aside (as much as possible of) business rationalities, cultivators can create co-design sessions that are “blank spaces” and not weighed down by everyday business considerations, thereby having the potential to better support more innovative explorations. Creating such spaces is of course easier said than done though, since the overall context of design industry is still “business-as-usual design”. To address this issue, and to further explore the potentials of co-design as a space for participatory ethics cultivation in design industry, we suggest inquiring into the relationship between “business-as-usual design” and ethics in design – how might they co-exist? How might we better combine making money with doing good for the world? Moreover: What are the negatives of only considering “business-as-usual design” reasons to care about ethics? Does “business-as-usual design” look the same in the global south as in the global north? And what are the additional rationales, besides ethically responsible design as a business opportunity or risk management strategy, that might convince design studios in industry, and in different cultures around the globe, to engage more in ethically responsible design?

Lastly, we recognize that the cultivation of new understandings, perspectives, and practices requires long-term engagement. Even though our study only spanned ten months, we believe it can serve as an exemplar of how design practitioners might cultivate ethics in a real-life practice setting. We hope that this can be useful for designers and design researchers interested in the ethics of design.

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APPENDICES

Appendix A: Survey and Miro boards, overview
 Appendix B: Practice-led ideas for ethics cultivation

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CONVERSATIONS WITH THE BODY OF THE OTHER: A THREE-STEP DIALOGICAL PROCESS

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ABSTRACT

Embodied design ideation methods rely on subjective—first-person—experiences of the designer to bring new ways of designing into being. Shifting the embodied design ideation method to the body of the other, we propose a three-step process that makes the experiences of a dancer accessible to a designer for the ideation of remote intimacies. To support access to the dancer's experiences, we facilitate embodied, dialogical exchange over three phases: i) observation of embodied explorations between the dancer and tangibles, ii) visual analysis of phase (i) documentation, and iii) a semi-structured interview with the dancer, using phase (ii) outcomes, incorporating drawing as a form of reflection. This reflexive process reveals how incorporating tangibility, ambiguity, and care into a conversation with the body of the other can open a space of possibilities.

INTRODUCTION

The body plays a significant role in building and nourishing intimacy. For people who are close by heart but physically apart—their bodies are geographically

separated—intimacy is experienced remotely without shared physicality. Yet from a phenomenological point of view, our bodies are an important medium of emotional perception. Through its resonances, our bodies charge self-experience while often remaining in the background of our awareness (Fuchs & Koch, 2014). Emotions may result from the circular interaction between affective qualities or affordances in the environment and the subject's bodily resonance, for example through expressive movements (*ibid*). Therefore, when designing remote intimacies for the far away bodies, an understanding of bodily felt experiences is required. However, when asking ourselves how to design for bodies who experience remote intimacy, we discovered a lack of ideation methods. We developed a three-step process to address this gap in design methodology.

Our process shifts embodied design ideation (EDI) methods (2017) to the body of the other—a person who is not the designer. In our context, the designer, (the first author), lacks bodily expertise. Hence, we focus on placing conversations with the moving body of the other (Svanæs & Barkhuus, 2020), through a three-step process, to gain access to a dancer's felt experiences with the aim of using their felt experience in design ideation. We approach our process primarily to expand and enrich the ideation process rather than focusing on generating design ideas. We describe how our process contributes to existing knowledge in this burgeoning area of design practice. Following, we present our findings and underline our new understandings on how to approach design ideation for people who are close by heart but physically apart.



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RELATED WORK

Many designers use the moving body as a creative material in design: Márquez Segura et al. (2016) engage bodily experiences early in the design process by inviting people to sketch new ideas with their bodies. Tomico and Wilde (2016) invite designers to leverage personal experience of their bodies in context by draping themselves in a material of interest and then moving around in that context to embody the ideation process. Vallgård et al. (2015) work explicitly with temporal form in designing computational things by investigating what vibration technology on different bodily locations might suggest, and how varying temporal forms can be experienced. These works rely on both the designer's and the participant's subjective experiences.

As Wilde et al. (2017) explain: “[Embodied Design Ideation] practices embody the challenge they present to traditional modes of scientific reporting: to make sense of them, one needs to experience them first-hand, or risk losing extraordinary richness and depth”. Embodied design ideation (EDI), in this way, relies on the first-person experience of the designer. Through this close contact, the method uses four ground concepts: to *disrupt* usual thinking patterns and *destabilise* norms, so that new ideas, qualities and feelings can *emerge* and eventually be *embodied* in design (Wilde et al., 2017).

METHODS AND MATERIALS

Our process begins with the body, referring to the notion of the “lived body”, as understood phenomenologically, where the lived body is both mind and body; subject and object; the sensory body through which we experience the world and ourselves (Merleau-Ponty, 1996). When designing with and for lived bodies, it is essential to have an in-depth understanding and examination of bodily felt experiences for design use. To access this expertise, we shifted the EDI methodology to the body of the other. We aimed to minimise the risk of losing extraordinary richness and depth. Thus, we collaborated with an Estonian-based Taiwanese movement and dance artist, who would have an embodied understanding of what it means to live close at heart yet far apart from loved ones. This dancer uses QiGong as a foundation for improvisational dance. In their understanding, QiGong is a gentle movement practice that cultivates subtle energy by working with the moving body (Hung, n.d.). During the day of our collaboration, before starting our three-step process, the dancer introduced the designer to QiGong in their studio. The designer got familiar with the practice by participating in a ninety minutes session led by the dancer. This session brought the designer into closer contact with her own body, and contributed to the development of the three-step process that we describe

here, for working with body of the other as creative material in a design process.

As we describe in detail below, we begin our three-step process by using a set of tangibles to place materiality in conversation with the moving body. Then we undertake a visual analysis of this phase. Finally, we return to the body of the other and interview the dancer, while using drawing as a reflection tool to understand the dancer's felt experiences of moving with the tangibles. The process unfolds in a co-created visual representation between the dancer and designer, which serves as rich material for design development. We translate this visual representation into a set of three commitments that provide a solid foundation to help us move forward in our design research process. These three commitments are: tangibility, ambiguity, and care. The aim of these commitments is to facilitate embodied understanding for the designer when designing for remote intimacies and when looking for design opportunities in the body of the other.

ESTRANGEMENT

EDI relies on estrangement to create new ways of designing. The concept of estrangement builds on the work of Maxine Sheets-Johnstone (2011), a philosopher and former dancer who argues that movement is the essence of our lives and beings. Sheets-Johnstone explores the consequences of disrupting habitual movements and proposes that by unsettling the habitual, humans can generate new perceptions. Because the act of experiencing occurs in the moment of perception, the further you disorient or prolong the moment of arriving at an understanding, the deeper or more detailed that understanding will become (Wilde et al., 2017). As a way of enacting estrangement, we use keywords and tangibles to disrupt the habitual ways that the dancer moves. The tangibles add physical and conceptual elements to disrupt the body in motion, and the keywords inform the dancer's motivations for moving.

KEYWORDS AND TANGIBLES

To develop our three-step process, we were inspired by a cultural probe study undertaken earlier in the same research project (Oktay, 2022). This study collected personal insights into the remote communication experiences of five participants who experience being physically apart from their loved ones. All participants were young adults who—similar to the designer—lived abroad. In this case, they were international Master's students. Over the course of one week, the study participants were tasked with observing and self-documenting their personal experiences of remote communication with their loved ones. The designer provided the participants with a probe kit that contained prompts for various tasks to be undertaken over the seven days. For example, on day



five, they were asked to have a video call with their loved ones while wearing gloves that physically limited their hand gestures, and to report the emotions they felt during the call. Further details are provided at (Oktaý, 2022). The study resulted in quotes, keywords, photographs, and clay pieces by the participants. We took inspiration from 8 self-reported emotions, that we used as keywords:

- loved
- alone
- relieved
- not free
- playful
- energetic
- caring
- curious

The cultural probe study responses further gave us material perspectives that we drew on to inform the development of our tangibles (Figure 1). For example, participants in the probe study mainly used their smartphones to connect to their loved ones. One mentioned how the disrupted sense of space affects their feeling of closeness in virtual settings. Another reported their reflections on her augmented bodily awareness during the study with a focus on hand gestures. Thus, during the construction of our tangibles, we developed tangibles inspired by the size of a smartphone (Tangible 1), the size of a human body (Tangible 2), and the sense of proprioception (Tangible 3).



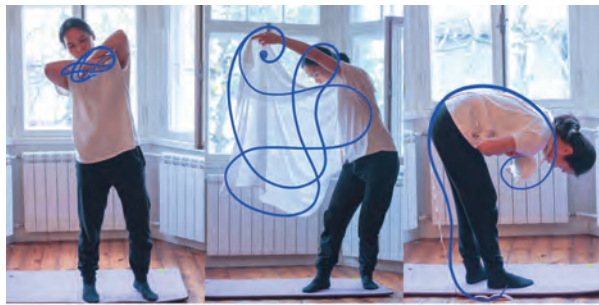
Figure 1: Tangibles, photographed in the dancer's studio: Tangible 1: A small rectangle that is cut out from machine-knitted polyester fabric. Measures 30 cm, 6 cm, 0.1 cm and weights <10 gr. Tangible 2: A big rectangle that is cut out from the same machine-knitted polyester fabric. Measures 150 cm, 120 cm, and 0.1 cm and weighs 300 gr. Tangible 3: Soft rectangular pillow of the same machine-knitted polyester, filled with leftover textile material, with an elastic rope.

The keywords assisted us in bringing in emotions, and the tangibles in placing materiality in conversation with the moving body of the dancer. As mentioned earlier, the dancer, like the designer and the cultural probe participants, is living far from many of their loved ones and could bring this experience of remote intimacies into their explorations.

THREE-STEP PROCESS DEVELOPMENT

Our session had three phases: i) observation of embodied explorations between the dancer and tangibles, ii) visual analysis of phase (i) documentation, and iii) a semi-structured interview with the dancer, using phase (ii) outcomes, incorporating drawing as a form of reflection. A visual and tabular overview is provided in Table 1, we describe them briefly below.

For Phase 1, the dancer was asked to sketch the keywords with their body while moving with one tangible at a time in their preferred order. Except for two keywords (not free, and energetic) the dancer chose to move with tangibles in the order of Tangible 1,2,3. For the two remaining keywords, their selected order was: Tangible 2,1,3. For Phase 2, the designer analysed the video recordings, and photographs taken during Phase 1, identifying similarities and differences in the motion and attention of the dancer. This visual analysis was used during Phase 3, when the designer conducted a semi-structured interview with the dancer, incorporating a drawing exercise in response to the visual analysis. The outcome was a visual representation co-created by the dancer and the designer (Figure 2). This representation enabled us to translate the dancer's felt experiences into the aforementioned design commitments and served as rich material for design development.



Loved



Alone



Relieved



Not free



Playful



Energetic



Caring





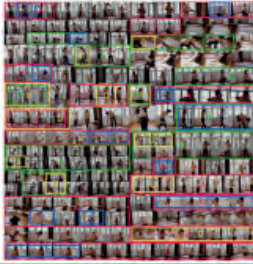



Curious

Figure 2: Dancer's line drawings on Phase 2 composite images, recording from memory the traces of their attention and movements while they were improvising with the tangibles. Composites are provided for all 8 keywords resulting in a visual representation of the attention in action co-created by the dancer and the first author.



Practices] __ [Bodies

Table 1: The three-step process i) observation of embodied explorations between the dancer and tangibles, ii) visual analysis of phase (i) documentation, and iii) a semi-structured interview with the dancer, using phase (ii) outcomes, incorporating drawing as a form of reflection.

	Description	Data gathered	Process	Result
Phase 1	Observation of embodied explorations between the dancer and tangibles	Video recordings, photographs, notes and sketches in the research diary		
Phase 2	Visual analysis of Phase 1 documentation	Visual analysis		
Phase 3	A semi-structured interview with the dancer, using Phase 2 outcomes, incorporating drawing as a form of reflection	Interview recording, photographs, notes in the research diary, drawings on the visual analysis		

PHASE 1: OBSERVATION OF EMBODIED EXPLORATIONS BETWEEN THE DANCER AND TANGIBLES

During Phase 1, the dancer conducted an embodied sketching process using keywords and tangibles. Embodied sketching aims at understanding and designing for bodily experiences early in the design process where people sketch with their bodies (Márquez Segura et al., 2016). The dancer was asked to move with the tangibles while sketching the emotions with their body. One by one, each keyword was revealed to the dancer. Then, according to the dancer's preference in order, they moved together with one tangible at a time using each tangible with each keyword. The process was documented with video recordings, photographs, notes and sketches in the research diary.

The dancer explored, played, performed, and expressed through their body in movement. The designer observed the dancer's explorative movements with the tangibles and detected various similarities between the motion and the attention of the dancer. These similarities are described in the next phase and can be classified as the tendency to make subtle body-part movements or solid

full-body movements, and the tendency to focus inward or outward.

Tangible 1 had the smallest size and weight of the three tangibles, and seemed to scale down the movements of the dancer: "[tangible] one is quite back and forth, like being curious about what is happening or what can be done. But also, curious about not just the object but myself. Like what am I doing with it and what does it become? And I think in ways more ambiguous, especially compared to the third object."

Tangible 2, being large and flexible, enabled the dancer to stretch and extend their body, thus creating a space for a performative experience: "I was not so much thinking about my own body opening like a bird but I maybe was thinking more of fabric being expanded... But of course, it also relates to the body because stretching the fabric is also stretching the body and the body is more open."

In comparison to Tangibles 1 and 2, Tangible 3 had a three-dimensional form. According to the dancer, they "wanted to play with [this] the object to explore the potentials of the object and the body".

Practices] __ [Bodies

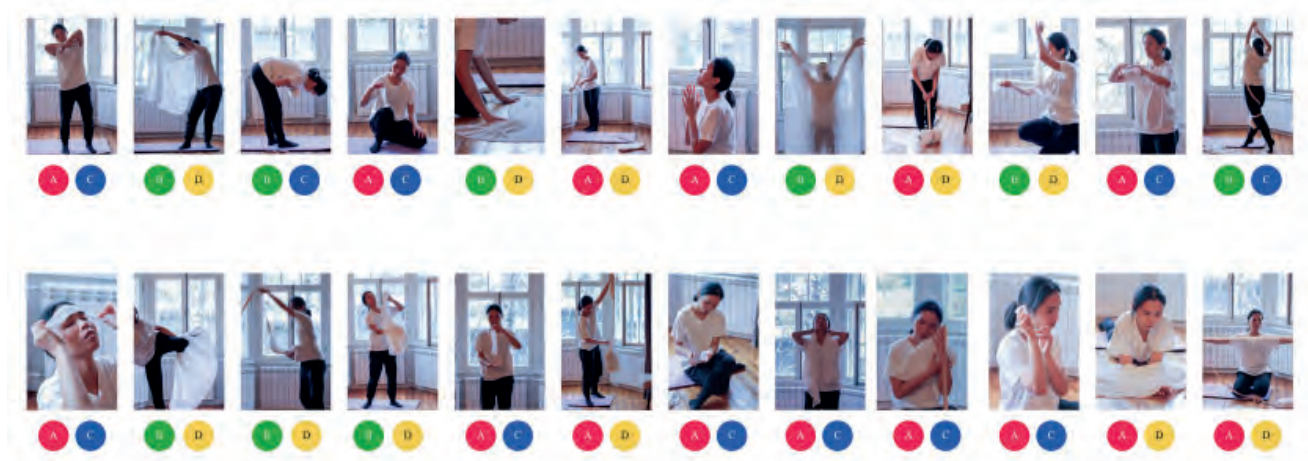


Figure 3: Sorted, coded, and selected data for the visual analysis. Codes A and B represent motions (A: the tendency to make subtle body-parts movements, B: the tendency to make solid full-body movements). Codes C and D represent attention (C: the tendency to focus inward, D: the tendency to focus outward).

Reflecting on all three, the dancer explains: “Second and the third one are playing with something, playing with the object and to explore the potentials of the objects but also the potentials of the body. I think more in the second one. I think there is a feeling of doing something and receiving a response of it, kind of being entertained by the response of it... But the first one, I am not sure, maybe I remember a couple of movements, more subtle.” When *taking care of* the tangible, the dancer made small movements, this brought the dancer’s body into situations that turn the familiar upside-down by adding a physical element to disrupt the body: “It’s like you have a problem in your hand, and you try to solve the problem in your hand but there is no space or room for anything else because you are trying to solve something in your hands, actually quite literally in my hands”. When the dancer worked with the small tangible, their attention seemed to turn inward. This phenomenon was visible in the results (Figure 2) where we see the dancer looking “focused” and “constrained” while moving with Tangible 1.

PHASE 2: VISUAL ANALYSIS OF PHASE (I) DOCUMENTATION

In this phase, the designer undertook a video and photography analysis of the material from Phase 1. The goal was to gain insights into the motion and attention of the dancer.

Through her analysis, the designer identified the active body-part and full-body movements of the dancer. The aim was to determine whether the motions were *subtle* and consisted of body-part movements, or if they were *solid* and consisted of full-body movements. Then, she looked into whether the dancer’s attention was directed internally/within themselves, or if it was directed outward, either to the tangible or the room itself as experienced through the tangible.

To analyse the motion and attention of the dancer, the designer sorted the video stills and photographs from Phase 1 and coded them into two sections for motion (A, B) and two for attention (C, D) (see Figure 3). A represents subtle movements, B solid movements, C inward focus, and D outward focus.

From the analysis, we see that the complex nature of Tangible 3 enabled the dancer to explore both solid (full-body) and subtle (body-part) movements and they tended to focus outward during the exploration. The expandable nature of Tangible 2 invited the dancer to make full-body movements predominantly and their attention tended to slide outward while moving with this tangible rather than being focused inward. The delicate nature of Tangible 1 resulted in subtle body-part movements and attention was directed internally.

Following the visual analysis, the designer created composite images (Table 1, Phase 2 Result) for all 8 keywords highlighting the similarities and differences in motion and attention of the dancer. The resulting images served as material for the semi-structured interview and as a base for a drawing activity. In this way, Phase 2 prepared the ground for Phase 3.

PHASE 3: SEMI-STRUCTURED INTERVIEW WITH THE DANCER, USING PHASE (II) OUTCOMES, INCORPORATING DRAWING AS A FORM OF REFLECTION

Embodied sketching is an in-the-moment activity, the sketches obtained are ephemeral (Márquez Segura et al., 2016). A challenge for this activity was to enable the dancer to remember, document, and articulate these ephemeral sketches, in ways that would give the designer access. We achieved this through various methods: visual documentation during Phase 1 was analysed during Phase 2, to prepare the ground for a



Phase 3 interview and sketching activity that we now describe.

Using the Phase 2 visual analysis as a starting point, the designer formulated a series of questions for a semi-structured interview with the dancer. The questions were complemented with a drawing task that invited the dancer to engage directly with elements of the visual analysis by annotating the focus of their movements and attention. The aim of these interwoven activities was to gather a deeper understanding of the dancer's felt experience during their embodied explorations with tangibles undertaken in Phase 1.

First, the dancer was invited to verbally articulate their experience of Phase 1. This discussion enabled us to collect specific data on bodily experiences while making room for surprises (Kvale, 2007). Next, they were asked to visualise their experience of the Phase 1 embodied sketching with tangibles, and to annotate their attention and movements onto the provided visual analysis (Figure 4).

It should be noted that if the designer had undertaken the Phase 1 exploration themselves, she would have a first-person perspective on what was emerging. The three phases together are a carefully designed attempt to gain access to the felt experiences of the dancer, so that what emerges might be identified and eventually embodied in future designs.

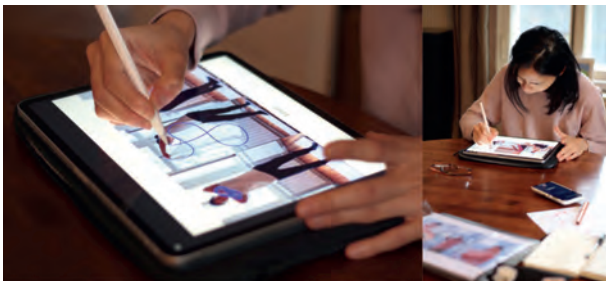


Figure 4: Dancer annotating their movements and the position of their attention on the visual analysis from Phase 2.

REFLECTION

If we return to the EDI methodology, we can see that the reflexive process described here *disrupts* the body by asking it to move with unfamiliar tangibles. With the addition of interview and drawing activity, this combination *destabilises* where the attention is placed and thus what may be possible in daily use of body-close probes for remote intimacies. What *emerges* are new understandings of designing for remote intimacies. Our three-step process thus *embodies* the dynamic and expressive potential of bodily engagements with materials (such as tangibles and keywords), impacting a person's ability to engage with their emotions, in our case in the context of remote intimacies. The process results in new understandings in moving forward in

design ideation for people who are close by heart but physically apart. We translate our new understandings into a set of design commitments that guide us forward in our design space: tangibility, ambiguity, and care (for).

TANGIBILITY

Tangibility is the commitment to move forward with our design research process with the attribute of being touched and sensed. Due to EDI's subjective nature, the adaptation of EDI methods requires reliance on articulating what is tacitly understood. To work with this "unimaginable act of translation" (Wilde et al., 2017), we used tangible interactions, which value moving bodies and make use of the relationship between physical objects and humans' motor abilities, as well as their sensory sensitivity to the rich expressiveness of physical objects (Djajadiningrat et al., 2007). Through this process, we discovered that the expressive-sensorial dimensions (Rognoli, 2010) of the tangibles were crucial to *disrupt* usual thinking patterns through embodied explorations with the moving body.

AMBIGUITY

Ambiguity is the commitment to move forward with our design research process with the attribute of opening up spaces for meaning-making, supporting engaging and thought-provoking experiences. The tangibles used in Phase 1 had no clear purpose. This ambiguity allowed the dancer to imagine and invent their use. Through our tangibles, we discovered that ambiguity supported new forms of embodied sense-making for the dancer. The ambiguity thus became "a resource for design" (Gaver et al., 2003) that can be used to encourage close personal engagement with probes or other artefacts to be designed further in our design research process.

CARE (FOR)

Care (for) is the commitment to move forward with our design research process with the attribute of creating bodily awareness while taking care of something. With its delicate nature, Tangible 1 brought awareness to the bodily experience of the dancer while seeking care from them. Place (2022) describes care as a feeling, an environment, an action or inaction. She explains: "to care may be to be charged with protection, welfare or maintenance of something or someone. It can be framed as a burden, as a responsibility, or as a privilege. It can feel good, or it can feel bad." (ibid). In our case, the dancer cared for the Tangible 1 as "a problem in their hands". This bodily experience invited the dancer to focus inward and nurtured their felt experiences. We see the ways that *caring for* can be used as an estrangement tactic by unsettling the habitual movement, and supporting the creation of new perceptions.

DISCUSSION

Following the estrangements in EDI methods, during Phase 1, we used tangibles to bring the dancer's body into situations that turn the familiar upside-down as a means to enable reflection on the intimate and the tacit (Wilde et al., 2017). Critically, we then added two processes; a visual analysis conducted by the designer, and the subsequent semi-structured interview with the dancer. These two additional steps made it possible to undertake embodied design ideation with an other, and be well-positioned to leverage this person's experience. Furthermore, the pre-step of the dancer introducing her practice of QiGong to the designer allowed the designer to become closer to her own body. This closeness supported the development of the three-step process and enabled the designer to approach the subsequent processes in a more informed manner.

Our process underlines how incorporating tangibility, ambiguity, and care into a conversation with the body of the other could allow a space of possibilities. When observing, analysing, and discussing the dancers' experience with Tangible 1—the most delicate, smallest and lightest tangible—we see that ways caring (for) can be used as an estrangement tactic to unsettle the habitual, and support the creation of new spaces for new perceptions. Following, during the interview, the dancer expressed their experience of moving with the keywords and tangibles: “My way of approaching these words and objects is to bring into my mind what this being loved is like, what this experience is like for me, so to recall some experience from my memories and then see if any of the objects would help me express that. I think that was my basic approach in the process.” In this way, we can see that the dancers' own experiences with being close at heart yet far apart informed their explorations; the keywords were essential in framing their explorations with the tangibles and the tangibles provided the necessary space for meaning-making. Gaver et al. (2003), describe the role of ambiguity in design as leaving space for meaning-making. The tangibles were ambiguous, and through their different shapes and affordances, left different kinds of spaces for embodied exploration and thus, through sense-making, meaning-making.

The keywords assisted the dancer to shape their efforts to fill the space left by this ambiguity. In “Doing things backwards: The OWL project”, Wilde and Andersen (2009), provide keywords *after* participant's embodied explorations with tangibles. In our case, providing the keyword in advance, enabled us to shape the exploration in line with the larger goals of our research project. If we look at the EDI method, we can see that our process creates a necessary space for new ideas, qualities and feelings to emerge, perhaps because we are working with an expert mover.

This form of ideation could be expanded to people to exchange experiences of living in different bodies and experiencing abilities or limitations that the authors don't have in their daily lives (see Wilde & Underwood, 2018; Beuthel and Wilde, 2017). Furthermore, the more-than-human approach could guide this method, inviting designers to imagine what non-human may be experiencing. Expanding the application of the method could thus open up new ways to build towards connections, entanglements or rising awareness in connection to others. The Phase 1 ideation session could also be implemented in an XR setting, “combining multi-user VR and motion tracking, where one is conceived and perceived simultaneously as both subject and object and becomes a partial figure of the spatial configuration” (Güzelis et al., 2022), again expanding the approach taken by Wilde & Underwood (2018).

Our conversation with the body of the other contributes to design research that affords exchange between a designer and a person who is not the designer. In our three-step process, the dialogical exchange makes the felt experiences of a dancer richly accessible to a designer. In situations where the designer cannot, or desires not to rely on their first-person experiences, our three-step process provides means for designers to begin with the body of the other in design ideation.

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DELIGHTFUL SCREEN TIME VISUALIZATIONS: A SKETCHING- BASED EXPLORATION

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ABSTRACT

Uncontrolled smartphone usage and excessive screen time are detrimental to people's wellbeing. Informing people about screen time behavior is one strategy to help them attain digital wellbeing—a pleasurable, efficient, and controlled relationship with smartphones and other everyday technologies. This paper presents a series of sketches that explore unconventional, delightful screen time visualization on smartphones, illustrating an alternative to conventional screen time graphs. By showcasing these design concepts, this paper seeks to promote analog sketching as a valuable off-screen practice for design research, as it involves immersion, patience, and reflection.

INTRODUCTION

The uncontrolled use of smartphones is problematic for many people (Bernroider et al., 2014; Nath, 2018; Geng et al., 2021). Excessive screen time undermines children's and teenagers' sleep, cardiovascular system, mood, and behavior (Lissak, 2018). It negatively affects the life quality in adults as well (Davies et al., 2012; Wang et al., 2019). Consequently, design academia and industry are looking for solutions and strategies that help people become aware of their screen time and keep smartphone use under control. That is, to help people attain digital wellbeing (Monge Roffarello & De Russis, 2019; Büchi, 2021; Purohit et al., 2020; Cecchinato et al., 2019; Cecchinato et al., 2019).

Some smartphones—and many third-party apps—employ graphs to inform and educate the user about her screen time and use behavior. This approach is appropriate to display quantities. However, conventional graphs may be ineffective in interesting the user to learn about her screen time, and become more reflective or critical about it. In this regard, alternative, nontraditional approaches to displaying screen time might better appeal to the user.

By considering the role of *delight* in elevating the aesthetics and persuasiveness of the user experience (Sosa-Tzec, 2022b; Sosa-Tzec, 2022a), this paper explores the application of the *design delight* framework to conceptualize, through sketching, unconventional, delightful visualizations of screen time on smartphones. This exploration has a research-through-design orientation (Zimmerman et al., 2007), and is concerned with the experience and affordances of analog sketching, particularly for the ideation of delightful design. Due to length constraints, this paper concentrates on briefly describing this exploration's approach and outcomes, closing with a short reflection.

APPROACH

Design delight is a conceptual framework concerned with how designed objects and their user experiences contribute to people's happy and flourishing lives. This framework centers on six experiential qualities: *engagement*, *surprise*, *liveliness*, *cuteness*, *serendipity*, and *reassurance* (Sosa-Tzec, 2022b). *Engagement* occurs when a designed object becomes the center of the user's attention and sends other stimuli in the context to the periphery. A designed object causes *surprise* when it appears, functions, or behaves unexpectedly but without minimizing the user's liking towards the object. *Liveliness* is a designed object's quality to convey energy, autonomy, whim, excitement, or dynamism through appearance or behavior, coming



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across as alive, charged, cognizant, or able. *Cuteness* refers to the quality of a designed object’s appearance and behavior that makes it seem vulnerable, tender, innocent, harmless, or helpless, urging care from the user. *Serendipity* arises when a designed object communicates multimodal information or presents an appearance, behavior, or functionality that results in a fortunate, grateful, helpful, or valuable outcome for the user. *Reassurance* refers to a designed object’s quality to remove feelings of uncertainty, disorientation, ignorance, or anxiety in the user through multimodal information communicated by the object or conveyed by its appearance, behavior, or functionality.

The decision to conduct the exploration of screen time visualization alternatives through sketching comes from acknowledging it as an archetypical, initial activity in the design process and the power it has to promote and relate thinking, learning, and representation (Buxton, 2011). The central idea of design delight and its six experiential qualities were taken into account during the sketching. These were used as guides rather than as design requirements. Other elements that informed the sketching include literature on digital wellbeing and design, and the personal experience of using the iOS screen time widget for many months. The preference for analog or handmade sketches over digital mockups was



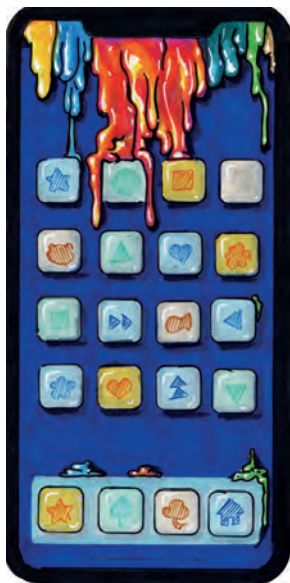
Figure 1. Connections between the six qualities of design delight and the nine sketched design concepts.

a consequence of the research topic—digital wellbeing—and the importance of detaching oneself from the screen to engage in activities that not only bring pleasure but also promote concentration, learning, patience, and acceptance (of one’s mistakes and *imperfect* outcomes).

PORTFOLIO OF DESIGN CONCEPTS

The outcome of the sketching activity were nine design concepts—one sketch per concept. The concepts are intended for the home screen or the lock screen of a smartphone. All concepts have the visualization of *the most used app* as their primary objective. Some concepts include the visualization of *the pickup app*, the name given here to the app constantly opened by the user immediately after she unlocks her smartphone. Though design delight guided the overall conceptualization of each proposal, some concepts include design features that are strongly connected with the qualities. Below is an annotated portfolio (Bowers, 2012) of the nine design concepts. A visual synthesis on the connections between design delight qualities and the nine proposals is included in this portfolio as well (Fig. 1).

SCREEN TIME GOO



Screen Time Goo is dynamic visualization for the home screen, which starts the day pristine after midnight. As a result of smartphone use, six colorful streams of goo appear on the screen. Five streams represent the most used apps so far. Consequently, the visualization may vary throughout the day. Each stream uses the most prominent color of the app’s button. The remaining stream is colored gray and represents all the other apps below the

top five. The streams slowly start occupying the space on the home screen, including the gutter between app buttons. An app’s goo stream increases based on its screen time. The largest stream of goo refers to the most used app. The viscosity of the pickup app’s stream is different. Unlike the other streams, the pickup app’s goo becomes runny and drippy, reaching and staining the bottom of the screen. The user learns about her screen time behavior at the end of the day by observing the amount of goo occupying the home screen and how stained it is. One could consider surprise as the central

quality in this concept and closely connected with engagement and liveliness. The user does not know what to expect to see during the day and may want to contemplate and reflect on how the goo streams take over the screen.

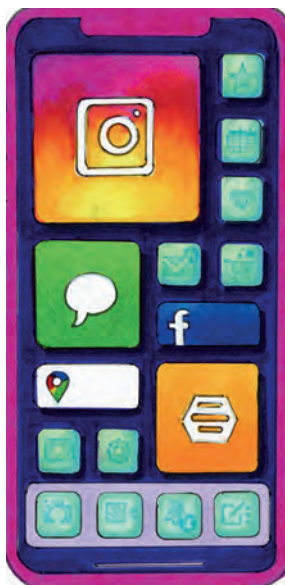
HUNGRY PAL



Hungry Pal is a gamified, interactive widget inspired by the digital pet *Tamagotchi*. This pal expresses various feelings and states, including excitement, hunger, and stress. The latter states appear when the user spends more time using apps than permitted. The user can define this time in the settings menu. Moreover, it can derive from the past behavior of the user, her friends, or users of a particular app. The hungry pal perishes if the user neglects to feed it

by dragging an app’s button into the widget. The hungry pal shows excitement when this event happens. The app button appears garnished and appetizing. This app remains blocked for the rest of the permitted screen time after the little pal devours the app. The user has three opportunities to prevent the hungry pal from starving. These opportunities appear on the widget as heart shapes. Above them is a circular progress bar indicating the percentage of screen time already spent for the current opportunity. If the user knows that she cannot take care of and feed the little pal, she can put it to hibernate—this means the user can use her smartphone freely for whatever period she wants. Independently of the user’s decision, the buttons of the five most used apps always appear chewed off. A little fork indicates the pickup app as well. These are suggestions to feed the little pal. Cuteness is the central quality of this design concept, followed by engagement due to the attention needed by the pal. In this concept, the user connects app blocking with something positive: taking care of the hungry pal.

SCREEN TIME TILES



Time tiles works on the home screen and modifies the width and height of the five most used apps' buttons to visualize screen time behavior. It uses the same grid applied to arrange the app buttons to determine the size increments, proportions, and position of such buttons. The most oversized tile indicates the most used app. The second and third most used apps appear smaller, and the size of the fourth and fifth most used apps is smaller still. This visualization has no tile or

visual cue representing the pickup app. Engagement is a crucial quality of this concept, which seeks to catch the user's attention by increasing the size of the app buttons. Besides the possible surprise of seeing how the tiles change, the user can quickly realize her screen time behavior and be more conscious about why she has been using the top apps and whether she wants to continue doing it.

SCREEN TIME STRIPES



This dynamic visualization for the lock screen presents screen time as a stylized histogram whose base is at the bottom of the screen and its y-axis is the screen's height. The stripes represent the five most used apps. Each stripe uses colors that allude to those found in the corresponding app's button. The segment corresponding to an app's screen time data appears brighter than the background above the segment. This segment also includes a subtle color-based segmentation to facilitate its reading. A thin

white line separates each histogram bar from the background above it. The default range for the y-axis is the 24 hours of the day. However, the user can choose another block of hours, which could refer to a personal goal or a calculation—for example, the median or mean—of previous data from the user, her friends, or users of a particular app. The user might focus on specific goals concerning working hours, leisure, or

bedtime through different configurations.

Engagement—the first thing the user sees when she takes her phone—and surprise—through the variations of colors and proportions in the visualization—are evident qualities of this concept. Nevertheless, serendipity could play a crucial role in the experience, mainly when the user defines specific periods she wants to track.

SCREEN TIME BUBBLES



Ten bubbles constitute this dynamic visualization for the lock screen. These float slowly, bouncing into each other, especially when the user shakes the smartphone, though they will always concentrate around the center of the lock screen. Nine bubbles refer to the most used apps. The remaining bubble encapsulates data from all the other apps. Their colors allude to the prominent colors in the corresponding app buttons. A halo around a bubble indicates the pickup app. This halo could

appear in the tenth bubble if applicable. The screen starts empty each day. The bubbles start appearing and varying due to smartphone use. The visualization adjusts the proportions of the bubbles to show a hierarchy. The number one app will always appear larger and show the app's name and current screen time. Only two other bubbles include the app name: the bubbles for the second and third place. Located at the bottom left corner, the variation percentage of screen time concerning the previous day shows. Next to this quantity is a little arrow that indicates whether there is an increase or decrease. Engagement is central in this visualization and relies heavily on the appearance and motion of the bubbles. Nevertheless, the names, screen time of the most used app, and the comparative screen time percentage help the user make a quick reading of her behavior and the app affecting her goals, leading to moments where serendipity arises.

SCREEN TIME LOCKER



This interactive widget blocks five apps for a given period. The user sets the timer—located on the top part—by swiping up or down on its numerals. On the timer's left side is a button showing a padlock with an open shackle. Tapping on this button *locks*—blocks—the apps for a set time. Immediately, the countdown starts, the shackle closes, and the *locker*—the widget's bottom area, where the five apps are—contracts vertically, leaving only the timer visible. The user

cannot use those five apps as these are hidden. The locker opens once the time is up—it expands, revealing the apps. By default, the locker shows the five most used apps. The number one app will always appear bigger and display its current screen time. The user can remove apps from the locker and put any other app inside. The number one app of the day will remain fixed unless the user deactivates this default setting. For the free-selection mode, an animation in the visualization will communicate the new hierarchy and which app has the number one position. The user can always reset the widget to its default mode. Engagement and serendipity are qualities that are important for this widget. Showing a large button to catch the user's attention and providing screen time for that app help the user learn about and reflect on her behavior and decide how she could achieve her goals by blocking specific apps.

SCREEN TIME PLANT



This dynamic visualization for the lock screen shows a plant whose health is affected by the user's screen time behavior over a given period, which could be days, weeks, months, or up to a year. The period starts with a fresh, healthy plant, which gets sick due to the most used app and the pickup app. The former causes brown leaf tips, whereas the latter produces leaf spots. Linked to each affection is a translucent white label showing the app's name. Behind the

name, a red bar represents the percentage of screen time for that app in its corresponding category—most used app or pickup app—concerning the current day. Three dots on the name's right side work similarly to a traffic light. Only one at a time and from top to bottom, they change color from white to red, yellow, and green to express the severity of the app's screen time in its category and concerning the visualization period. The plant will try to heal if the screen time decreases. It might not heal completely, nonetheless. By the end of the period, the user can learn and reflect on her screen time behavior based on how healthy or sick the plant is. Engagement and liveliness are essential qualities in this visualization. They connect with surprise, serendipity, and reassurance when the user gains insight into how her behavior during the period can affect her wellbeing, represented by the plant.

SCREEN TIME WILDFIRES



Screen time appears as wildfires in this dynamic visualization for the lock screen. The wildfires occur in a forest landscape, which occupies the whole screen, conceptually divided into rows representing the hours of the day or of a given period defined by the user, going from the horizon line of this forest to the bottom of the lock screen.

Regardless of the visualized period, the landscape will change to reflect the sun's position and weather.

Within a row, a wildfire will show when the current

screen time surpasses a threshold defined by the user or calculated from past behavior of the user, her friends, or the users of a specific app. The extension and intensity of a wildfire reflect the time spent using the smartphone. Once the day or period starts, the user cannot turn the visualization off or reset it. All the wildfires will remain visible and only disappear after midnight—if the visualization is in the 24-hour modality—or reset the visualization in the settings—for any other period. Engagement is a vital quality of this visualization, engendered by the wildfires and the changes in scenery. There is a strong influence of liveliness as well. In addition to the surprise that the emergence of the wildfires could provoke, observing the wildfires could help the user identify difficult moments of the day or period and feel reassured about those moments when screen time did not impede her from achieving her goals.



SCREEN TIME HONEY BOTTLE



Like those found in supermarkets, a bear-shaped honey bottle is the central element in this dynamic visualization for the lock screen. The honey in the bottle represents the screen time that the user has available to consume each day. In the settings menu, the user can define the permitted screen time. This time can also derive from the user's or her friends' past behavior data. On the bottle, there is a blue line indicating the maximum level of honey, which replenishes as soon as the

day begins. There is also a label with an arrow pointing to this line communicating the total screen time available for the day. Using the smartphone depletes the honey in the bottle. The bottle will remain empty for the rest of the day if the user consumes it all. A warning icon and a red rim on the honey's surface appear if the user incessantly unlocks and uses the smartphone within a short period. The bottle's label shows the current screen time and the most used app's icon below the word "Honey." The leading quality in this concept is cuteness, which closely connects with engagement and surprise. Associated with this cuteness is presenting screen time not in an aggressive or concerning way but as something delicious and pleasurable.

CONCLUSION

This paper presents the analog sketches of nine design concepts exploring unconventional, delightful screen time visualization alternatives that can help a person attain digital wellbeing. Future work involving these sketches includes eliciting and analyzing attitudinal reactions from smartphone users. Takeaways from this exploration revolve around the generative application of the design delight framework and value of sketching as a research-through-design activity and domain.

Design delight not only posits delight as significant element in the user experience but connects it with living a happy and flourishing life. This idea suggests that delight—and aesthetic experience, in general—plays an important role in how design helps people attain wellbeing, including the digital kind. As designing for delight is part of the user experience design discourse, the notion of delight seems to be taken for granted. The sketches here presented seek to illustrate that designing for delight is far from merely ornamental and that utilizing a framework centered on

delight-related qualities can be useful to conceptualize design alternatives that are still centered on the user's needs.

Regarding analog sketching, this activity becomes more significant when digital wellbeing is the domain being explored. Working with pen and markers transforms into a kind of *mindfulness* practice where the lack of *copy, paste, and undo* urges one to be patient, focused, and embrace *imperfection*. Sketching entails learning and skills development: rendering techniques, understanding materials interaction and quality, semiotics, visual persuasion, etc. The value of sketching in research-through-design should not be diminished. As the sketches here presented seek to demonstrate, serious sketching can set the scope of the kind of design outcome that a research-through-design project might need to produce.

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DESIGNING FERTILITY OTHERWISE: OF HUMAN, ANIMAL AND SOIL RELATIONS

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ABSTRACT

This exploratory paper unpacks the design space of fertility sensing, reflecting on current meanings and designs for fertility in humans, animals, and soil. Attending to the curious relations between these, we explore how fertility technologies share histories across patriarchal and capitalist visions of bodies and land. We provide a critical feminist analysis of fertility sensing and begin to unpack how design might approach this space otherwise, by means of exploratory prompts and opportunities that we call ‘design seeds’. We accompany the design seeds with four evocative images, engaging practically and materially with these opportunities, opening up for critical yet hopeful engagements with human, animal, and soil fertility. We invite designers to notice these entanglements and extend to more-than-human perspectives in designing fertility tracking and sensing technologies.

INTRODUCTION

Fertility is the ability of humans, animals, or plants to conceive offspring, to produce (to be productive), or to

reproduce (to replicate, to create a copy), as well as a quality of a seed or an egg, or the soil or land. Western notions of fertility are situated within long-standing and ongoing histories of patriarchy and colonialism, where patriarchy expands beyond the exploitation of women, but is also an attitude of domination over nature and land (Escobar, 2018). Patriarchy reduces the meaning of fertility and fertile bodies to one capitalistic goal, to produce. Bodies and land are swayed to produce offspring or yield a harvest to achieve value within society, striving for an ideal reproductive body or ideal profitable land. Those who do not meet these goals are deemed less capable, cast aside, and “othered”. Such patriarchal and capitalist logics of fertility have not only harmed women’s bodies by exercising control of bodily autonomy but have also contributed to animal violence in farming industries and to the depletion of soil (Mies et al., 1993).

These perspectives are imbued in designs for fertility and fertility technologies: “design designs” the meaning of fertility (Escobar, 2018). Here we, as design researchers working with human reproductive health, see an opportunity for design to challenge patriarchal and capitalist logics, reimagining meanings of fertility through a feminist and posthuman lens, by paying attention to the neglected relations between the fertile bodies of our world: humans, animals, and soil. As we will show, these relations are not inexistent or empty, they are curious, fantastic, yet often unknown or unacknowledged. By attending to the *blank spaces* and *in-betweens* of fertilities, we urge designers working with human health to care for these more-than-human



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relations, and to join recent calls to de-center the human in design (Forlano, 2017; Wakkary, 2021; Ávila, 2022).

FERTILITIES IN DESIGN

We begin by providing brief critical accounts on how fertilities are sensed, the ethical implications arising, and the scales to which they extend. We focus on fertility *tracking* and *sensing*, that is, the practice of collecting data, or sensemaking of the biological phenomenon or experiences of a fertile (human or animal) body or fertile soil through technologies.

HUMAN FERTILITY

Sensing: Fertility is often understood by observing, collecting, and making sense of diverse health indicators or emotional and physiological symptoms of the menstrual cycle (Costa Figueiredo et al., 2017; Schneider et al., 2019). Some speculate that the earliest forms of fertility tracking date back 20,000 years ago, to exemplars of etched bones and rocks marking every day of the cycle. Since then, fertility awareness methods have enabled women to document their menstrual cycle through pen, paper, or digital spreadsheets. Nowadays, with the prevalence of smartphones and embedded sensors, there are a plethora of apps and services designed for fertility self-tracking, marketed as FemTech (technologies focusing on the female body). These technologies predominantly measure basal body temperature; levels of the luteinizing hormone in urine; crystallization of saliva (also called *ferning*); progesterone levels in saliva; cervical mucus texture, color, and conductivity; breath; and heart rate.

Ethics: Although feminist approaches to fertility are flourishing (Reime et al., 2022), the majority of FemTech devices perpetuate societal norms. Many fertility tracking technologies come with a disclaimer informing of their unsuitability for people with irregular cycles, polycystic ovarian syndrome, endometriosis, or reaching menopause, since their precision is maintained by presuming a person has a regular menstrual cycle (Costa Figueiredo et al., 2017). Additionally, fertility tracking through temperature cannot yield trustworthy results in cases of deviating or non-routinized lifestyles including sicknesses, hangovers, or different sleeping conditions. In many cases, these irregularities become the equivalence of illness or disease and failure to conceive, which further increases anxiety and stigma of non-normative bodies (Sharma & Mishra, 2018). Furthermore, the notion of human fertility has been formulated in a deeply gendered and heterosexual context, often excluding people that have no partner, a partner that cannot get them pregnant, multiple partners, or an infertile partner. Most FemTech technologies are designed for one-person use, further increasing the emotional and social burden of fertility tracking put on menstruating bodies (Homewood et al., 2019).

Therefore, there is a tension between empowering people with the knowledge of their fertility and the growing responsibility, surveillance, and control over women's lives, making it more and more challenging for women to willingly track intimate data.

Scales: Human fertility expands beyond the individual body and is not only entangled with the bodies of others, but with society, the state, and the environment at large. Pollution and the use of plastics highly impact fertility (Clancy, 2021), and we are just beginning to understand how epidemics (like COVID-19) impact it as well. Due to these uncertain reproductive futures and the decline in Western population, social anxieties encouraged by capitalist platforms reconfigure fertility as precious and vulnerable, encouraging women to track their cycles and be aware of their ovarian reserve (Roberts & Waldby, 2021).

ANIMAL FERTILITY

Sensing: There are a plethora of ways that farmers determine if, e.g., a cow is in heat (optimal time for artificial insemination) via temperature sensors, monitoring the herd's behaviors and movements, or measuring the ferning or conductivity of cervical mucus. Many of these "ovulation detectors" are marketed toward pig, cow, sheep, and dog breeders. Curiously, although these mammals and humans have very different fertile cycles, the methods are very similar to the ones used in FemTech. In fact, much of the early biomedical work searching for answers about human fertility cites studies done on cows, e.g. Cohen et al. (1952). Little research exists which unpacks the tensions that arise when equating the two species' fertility. Have FemTech technologies been inspired by agricultural fertility sensing techniques? And if so, deliberately pointing out the shared oppressions between women and cows does not come without its baggage of moral tensions (Adams, 1990).

Ethics: From facial recognition for managing pig farming, to virtual reality headsets for increasing cow comfort, the use of technology to enhance agricultural re/production is anything but problematic. Environmental activists argue for a drastic reduction in meat and dairy production and consumption, as it accounts for a large impact on the climate crisis. These massified industries also prove to be detrimental to human health, where meat and dairy farms are making residents sick (Levitt, 2019). Many ethical problems arise when thinking about design's role in this agricultural panorama: designing for increasing animal fertility might be equally problematic as designing for decreasing and controlling it.

Scales: Away from large-scale industrial farming practices, we find a more hopeful growing body of design projects focused on small-scale agriculture as well as designs fostering close attention and care for



pets and urban animals (Jönsson & Lenskjold, 2014), pollinators (Jönsson et al., 2021), birds (Biggs et al., 2021) or co-habiting with pests (Ávila & Ernstson, 2019). Many of these approaches are situated within more-than-human and posthuman design, thinking with Haraway's *companion species* (2008). Fertility is further troubled by notions of cross-species reproduction, as in Ai Hasegawa's (2011) artistic speculation of a human giving birth to an endangered species of dolphin. These perspectives blur the boundaries between human and non-human animals and discuss the complexities of multispecies care.

SOIL FERTILITY

Sensing: Soil fertility is often understood through the macro-nutrients nitrogen, phosphorus, and potassium, also referred to as NPK values in common fertilizers. However, organism activity is also a critical factor in soil fertility, such as the fungi, worms and insects inhabiting the soil; the organisms which degrade organic matter and sustain healthy microbial activity in the soil. Humans can also use their embodied senses to sense soil fertility. Leah Penniman (2018) describes how indigenous ways of touching, squeezing, smelling, and even tasting soil can be useful in determining the fertility of soil. Western industrial tools for sensing and tracking soil fertility include digital sensors, such as pH and conductivity sensors, and chemical tests which measure the NPK values in a diluted soil sample.

Ethics: Living soil is the basis of all terrestrial life and a condition for human and non-human survival. However, the liveliness of soil is drastically influenced by toxicities like environmental pollution. Soil fertility is under threat from microplastic pollution and anti-microbial resistance, and it is more important than ever to care for biodiversity in soil and the ability of soil to grow nutrient-rich food. Soil fertility impacts the quality of the food we consume, yet with industrialized food production, the great distance between the soil in which the food is grown and the supermarket where the food is sold, banishes soil out of sight and out of mind. In urban contexts, it can be hard to even access soil itself, not to mention access to understanding the importance of soil and knowing its fertility.

Scales: In the design community, there has been a rise in explorations of soil fertility. Soil chromatography has been used to support urban farmers in understanding their soil samples in urban community gardens, where fertility is interpreted visually through circular imprints (Poikolainen Rosén, 2022). Design work has explored wearables for sensing the soil where mushrooms grow (Liu et al., 2018), soil microbial activities and potentials of co-healing with soil (Tarkhanian, 2023), and several projects use human urine or menstrual blood as a way to fertilize soil (Wernli, 2021; Campo Woytuk & Søndergaard, 2022; Helms et al., 2021). These works

exemplify the role design can play in reimagining humans' relationship with soil and demonstrate how soil fertility is a complex aggregate of many elements, not just one entity that can be quantified easily.

DESIGN SEEDS

Through analyzing and (dis)entangling practices and meanings in human, animal and soil fertilities, we bring forth opportunities in the form of 'design seeds' (🌱): prompts and questions that can be used to formulate design briefs. We accompany each text with images that act as visual prompts for furthering design imaginations (see figures 1-4). These seeds are not exhaustive, instead, they intend to sprout diverging ideas and conversations. To tease out these seeds, we have used a feminist lens and asked: What bodies are sustained/left out when designing for certain views of fertility? What curious and neglected relations might we notice if we expand our notions of fertility?

SLOW, JOYFUL, QUEER

There is a tendency toward finding the most optimal and precise method to measure fertility quantitatively. Although discrete levels of the chemical/hormonal components in soil/bodily fluids or binary outputs displaying "fertile/not fertile" are helpful to obtain quick and simplified knowledge, this approach is not always what communities strive for, as exemplified by pregnancy test "tweaking" (Clements & Nixon, 2022). Furthermore, binaries reduce the complexities and experiences of fertility to the act of being designated as standard or not, which risks excluding non-normative bodies (human, animal or soil).

Technologies also prioritize and optimize for just the right moment to become pregnant or for artificial insemination. However, fertility can be interesting beyond the act of reproducing. E.g. there is already an existing will and curiosity to learn about the menstruating body beyond its involvement in pregnancy (Campo Woytuk et al., 2020).

In addition, western perspectives on women's reproduction and sexuality have always been geared towards becoming pregnant, not towards pleasure and joy. Fertility is thus unsexualized, medicalized, and associated with feelings of discomfort. There is also a tension present when mixing sexuality and pleasure with medical and clinical experiences, which stems from the fear of being involuntarily sexualized in these environments. However, experiences of fertility can and should be joyful and positive without having to equate them to sexual experience.

🌱: We seek to imagine the purpose and meaning of fertility to be made through everyone's own experience, whether it is about having a baby, knowing your body, claiming space, or planting seeds in the soil. By

allowing for alternative paths towards this meaning-making, we open up for unexpected and queer meanings which could even take place across species. For example, for some, fertility might mean the ability of menstrual blood to fertilize soil, as exemplified in the design project Biomenstrual (Campo Woytuk & Søndergaard, 2022).

Making meanings *otherwise* takes time, and fertility might not be able to be sensed immediately, therefore it might not work in efficiency-driven paradigms. Perhaps it is enjoyable to take your time, build up a long-term relationship with fertility, and engage with uncertain and qualitative sensing (Homewood et al., 2019), nurturing curiosity and joy?

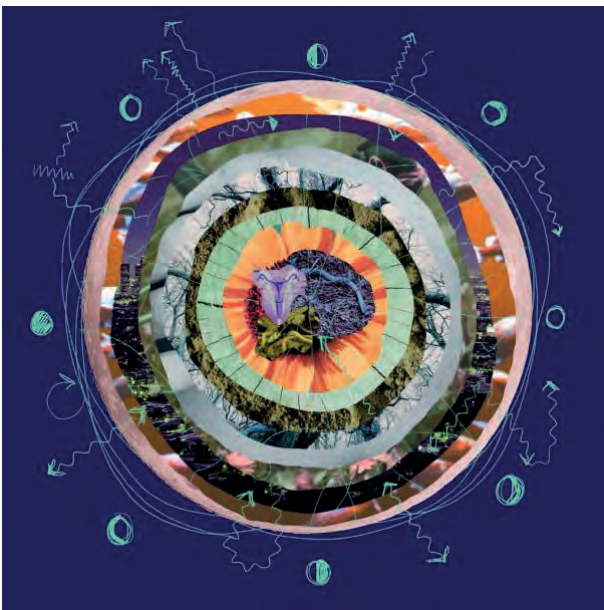


Figure 1: Slowing down, breaking up, and layering the temporalities of human-animal-soil fertility create new curious meanings and joyful deviations from the reproductive path.

FROM HARD TO SOFT AESTHETICS

Through our explorations of human, animal, and soil fertility technologies, we found troubling aesthetic trends across them. Sensors built with metal probes, poking with spikes and sharp edges, for easily stabbing the soil. Phallic forms are predominant, and many objects meant to be inserted vaginally are metallic, hard, rigid, and cold, similar to gynecological tools (Sundbom et al., 2013). Strips, sticks, and dipsticks permeate home fertility tests. For animals, the medical and industrial aesthetics are exaggerated (instruments, detectors, examinations...) and sometimes violent (insemination ‘guns’). Searching for images of “fertility sensors” on search engines results in a mix of sensors for women, soil, and animals alike, sometimes difficult to even tell them apart. In contrast, for digital products, the usual feminine, pink, infantile, and innocent aesthetic choices are found across menstrual tracking, pregnancy, and ovulation-tracking apps (Epstein et al., 2017). Gender

norms are also very present in colors and forms of soil fertility sensors and apps, where dark green, camouflage patterns and raw exposed electronics indicate a preference towards a stereotypically masculine hobby.

🌱: For this design seed, we offer an opportunity to rethink the aesthetics of fertility. Might we move from harsh shapes, forms, and materials, to softer, less medical, and industrial choices? And how might we avoid conforming to gendered stereotypes through these aesthetic choices, moving towards norm-critical aesthetics of fertility sensing (Ehrnberger et al., 2012)?



Figure 2: The morphing of shapes, colors, and materials of human-animal-soil fertility sensors suggest a new soft norm-critical aesthetics.

EMBODIED, INTIMATE AND PLEASURABLE SENSING

Many fertility sensing technologies and techniques create detachment between “the sensor” and “the sensed”: inserting probes into the vagina or soil but then reading the measurements on a digital device; bracelets and rings that automatically collect data; or collecting and shipping off a soil or blood sample to a lab. Although these forms of sensing may be empowering or imperative for diagnostic approaches, we wonder what embodied ways of sensing fertility might bring to the table. For instance, multisensory approaches can be exciting and pleasurable. Touching, smelling, or listening to soil, flesh, or bodily fluids, and getting hands dirty and sticky, creates more material, emotional, and intimate ways of engaging with data, and contributes to broadening what data means. This might require designing with the uncertainties of fertility, which already exist for people with irregular menstrual cycles (Chopra et al., 2021) and in the complex composition of soil.

🌱: How might we design more embodied fertility sensing with sensory engagements, bringing close “the sensor” and “the sensed”? With this, we imagine an orientation towards more pleasurable and enjoyable interactions with fertility, while staying with the critical question of “who is deserving of this pleasure?”

For this, design needs to work beyond the normative body, adopting intersectional feminist positionalities, considering how gender, race, class, ability, and sexuality have determined who gets to have pleasurable experiences. Furthermore, despite finding ourselves in an anthropocentric position we might not be able to fully avoid, designing for fertility could look beyond human exceptionalism and attend to more-than-human needs and experiences, who are also deserving of pleasure. For example, in how Ece Tan (2022) explores how to design for cows’ dignity and pleasure during artificial insemination, or how artists and philosophers Annie Sprinkle and Beth Stephens explore what it means to become lover with the Earth in their ecosexual positionality (Sprinkle et al., 2021).



Figure 3: Connecting the senses of more-than-human species to stimulate pleasurable fertility sensing through touching, tasting, seeing, and listening.

FROM INDIVIDUAL CONCERN TO COLLECTIVE RESPONSIBILITY TO PLANETARY CARE

Fertility does not just involve fertile bodies but is a societal concern. Fertility can be a shared experience with non-fertile bodies and others, where partners, parents, and loved ones might be invited into fertility tracking, pregnancy, contraception, and beyond. Loved ones might be involved in caring for children, in deciding and influencing the environment in which a child is raised. Fertility is a collective responsibility, like reproduction, it is “the struggle for the collective conditions for sustaining life and persisting over time

amid life-negating structural forces, and not just the right to have or not have children” (Murphy, 2017).

Furthermore, more and more people decide not to have children due to the climate crisis. Human fertility is thus drastically entangled with the environment. The very toxicities of pollution, pesticides, and plastics accelerating the climate crisis are not just detrimental to the land and the soil but have proven to have long-lasting impacts on human endocrine systems, causing increased menstrual irregularities (Clancy, 2021).

Contaminated and depleted soil further entangles human experience through food consumption: the soil becomes us through what we eat. There is also a long and tense history of blending human, animal and soil fertility, present across the globe in ritualistic traditions and folklore imbued with magical beliefs such as fertility rites or sacrifices enacted by a community in order to stimulate both soil and human fertility (Saha, 2022).

🌱: In this design seed, we ask: how can we invite *others* into fertility? How can we expand the responsibility and care of fertility from individual to collective to planetary? How can we design for one fertility in a way that prospers and cares for other species’ fertility? And how can we do this by maintaining bodily autonomy and acknowledging that not all fertile bodies (have) receive(d) the same reproductive rights?



Figure 4: Like layers in soil, micro to macro, fertilities bleed and leak from individual concerns to collective responsibilities, to planetary care.

CONCLUDING REMARKS

By inquiring about histories of human, animal, and soil fertility, we have traced how they relate and differ, how some beings are regarded as deserving more than others; how these different fertilities and species are “not one

and the same, but all in this together” (Braidotti, 2022). If reproduction means to “support some things and not others” (Murphy, 2017), supporting and nurturing connections across human, animal and soil fertilities is also a way to support and center the bodies that have been excluded and oppressed. We hope these design seeds inspire feminist and posthuman design for reproductive health and stimulate conversations with the already flourishing body of design work exploring more-than-human entanglements.

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AN INQUIRY INTO THE FORM-GIVING ACTIVITY FOR THE DESIGN OF TECHNOLOGY-DRIVEN PRODUCTS

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ABSTRACT

The research would like to explore the role of the forms of technological devices. As products are seen as touchpoints in a complex system of experiences, the form-giving activity of the designers needs to be redefined. A technology-driven product such as a home assistant or a mobile phone is part of a service. These service systems consist of several technologies, and interfaces through these technologies are connected to each other to other services and to humans, a brand that is responsible for the customer or user experience that provides other services and closely works with policies of many countries that is overlooking and regulating these systems. In such a complex system, the form of these devices remains mostly very unobtrusive, for example, when compared to other product families such as furniture or lifestyle products. The research wants to point out the form-giving activity of a designer in the process of product development. The research is aimed to develop strategies to underline the forms of the devices by adding a new layer of shells. These shells would act as starting point to discuss the role of the forms technology-driven products have.



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BRIDGING HUMAN-CENTRED DESIGN AND ORGANISATIONAL LIMINALITY: EXPLORING THE IMPACT OF HCD PRACTICES ON ORGANISATIONS IN LIMINALITY. AN INQUIRY INTO DESIGNING FOR CHANGE.

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ABSTRACT

Organisations find themselves in contexts of continuous ambiguity and uncertainty, exposed to disruptive external factors that are out of their control and that change at increasingly rapid speeds. These contexts force organisations to be immersed in continuous change and transition where the organisation is not strictly definable as they are dissociated from typical action. This state, called liminality, requires organisations to apply much more agile design processes that reduce new product and service development times. Previous studies endorsed the potential of Human-Centred Design (HCD) as an enabler of strategic and organisational change. However, little or no research has addressed how HCD practices foster organisations in liminality to transform capabilities to maintain competitiveness. Therefore, this PhD aims to reveal the impact of HCD practices on organisations in liminality.



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FRAME JOURNEY, DEVELOPING ADAPTIVE WORKSTATIONS FOR HUMAN CENTERED SMART FACTORIES

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ABSTRACT

With a diversifying workforce well-being is an increasingly important topic to be addressed in manufacturing. Whereas mental well-being has been well studied in the HCI community for knowledge workers, well-being for factory workers has been mainly assessed in terms of ergonomics and task optimization. Concerns are about safety and accident prevention, but not about the tacit experience of the workers themselves.

In the “Human centered smart factories” project we aim to develop interactive support systems to improve all aspects of the individual workers well-being. We use therefore a combined approach of HCI and engineering methodologies to first identify points of friction and opportunities of intervention, to then develop in participatory workshops with the workers together new solutions. In this we combine aspects of design anthropology, HCI, lean manufacturing, and ergonomic task assessments.



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DESIGNING FOR HUMAN-NATURE ENTANGLEMENTS

MEDIATING NATURE FROM A MATTER OF CONCERN TO A MATTER OF CARE

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ABSTRACT

There are increasing concerns about how environmental disruptions affect humans and natural ecosystems. These concerns contrast with how our interaction with nature is becoming increasingly distant. My interest in designing technologies within more-than-human worlds is motivated by current concerns related to the climate crisis, in parallel with employing design practices that, in their application, uncover exploitative and instrumentalist impacts toward nature. Through this work, I aim to advance the more-than-human turn in HCI, further opening the design space and contributing to new ways of inquiring into mediating more sustainable and collaborative human-nature relations. Specifically, I address the topic of understanding through care how technology shifts human-plant relations and how developing a multiple-timescale sensibility can develop care for nature. I draw from bodies of work that formed the concepts and theories related to care and time and employ design-led approaches, such as Research through Design and Autobiographical Design.



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AGONISTIC DESIGN: NEW APPROACHES FOR ENTANGLEMENT

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ABSTRACT

The discriminatory effects of new technologies often only become apparent long after these technologies are already ingrained within society. This can be seen in recent cases where algorithmic decision systems automating the reclamation of taxes and childcare supports have unfairly targeted people from other countries and disadvantaged backgrounds. In addressing these systems' failures, neither the designer or the user should have the sole responsibility for making technology fairer - instead it should be an agonistic, ongoing and participatory activity.

Agonistic design is an ethical approach which acknowledges the users' right to agency and an acceptance that no design is a solution, rather a broken thing that is open to be repaired and reconfigured as needed.

This project seeks to define a new design approach which facilitates a shared future of reconfiguration, contestation and design-after-design, as a bulwark against solutionism and emerging harms as we enter a new paradigm of HCI.



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CIRCULAR FASHION IN THE CAPITALOCENE: VALUE-CREATING ACTORS, ACTIVITIES AND TYPES OF DESIGN ON THE RESALE MARKET

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ABSTRACT

My PhD project provides insights about value-creation in the fashion resale market which holds useful information about human-garment relationships and allows designers to learn from the already made. Through a variety of ethnographic research methods that take off within existing resale environments, I explore 1) *actors*, 2) *activities* and 3) *types of fashion design* that create resale values. I draw on an actor-network theoretical (ANT) approach that situates fashion designs as co-dependent and world-making phenomena (Latour 2008; Yaneva 2009). This requires for circular fashion design, i.e. lasting design that performs well in circular resale business models, to be perceived as an effect of multiple heterogeneous mechanisms rather than a cause of design strategies and material attributes alone. By studying resale mechanisms, I seek to challenge simplistic understandings of design for longevity while contributing with insights that can pave the way for a meaningful circular transition of the Capitalocene fashion industry.



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PERSONHOOD: DEFINED, COLLECTED, AND INTEGRATED

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ABSTRACT

How do we care for persons who cannot tell us who they are?

This challenge is the starting point of an interdisciplinary project between Inter-Actions, Parenting and Special Education, and LUCAS at KU Leuven that aims to improve the person-centered care (PCC) offered to non-verbal persons with high support needs, who cannot express their own personhood verbally. The project takes a three-phase approach: define personhood, develop tools to access and record this personhood, and integrate this knowledge into real-life care settings. The first phase involved a literature review, focus groups, and immersion sessions. The second phase is ongoing and involves four research methods; interviews, shadowing, cultural probes, and ECD-sessions, to assess their ability to collect data on non-verbal personhood. The project aims to develop care methods based on design methods and provide a tool for carers to enhance PCC for non-verbal persons with high support needs.



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DESIGNING FOR DELIBERATION— AN OPEN DEBATE ON THE USE OF AI-PROCESSED HOLOGENOME BIODATA

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ABSTRACT

Making Artificial Intelligence (AI)-processed human “hologenome biodata” more accessible and debatable within society by design is my research focus. “Hologenome biodata” is the whole set of genomic data of a host and its symbionts (especially its co-habiting microbiome). Recent science and technology research shows the potential risks of “AI-processed human hologenome biodata” on our personal identity and social interactions. However, there is a lack of attention and discussion of the socio-cultural issues surrounding these data. My interdisciplinary, practice-based research will employ critical and speculative design and co-design design methods to explore this absence and provoke reflection and discussion on the potential influence of “AI-processed human hologenome biodata”. Through my research, people will be invited to develop their understanding of what that biodata means to them and to consider the potential ethics, privacy, biases, and politics behind the technology. The research outcomes will be reflected, presented, and communicated through design artefacts.



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THE DESIGNER'S ROLE IN ENABLING TRANSDISCIPLINARY SOCIAL TRANSFORMATIONS IN LATIN AMERICA

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ABSTRACT

Extensive research has been done on design and its role in the public sector. However, research focused on design and the public sector in Latin America is scarcer. It represents an opportunity for designers operating in a complex space that includes higher corruption levels, budgetary constraints, social unrest, and some of the highest levels of inequality worldwide. My doctoral research focuses on the designer's role in Latin American Public Sector Innovation to understand what design capabilities are needed when engaging in such complex work, how to surface and develop design capabilities in non-designers, the challenges of proving the legitimacy of design in the public sector, and design's contributions in transdisciplinary collaborations that occur in those spaces.



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DESIGN RESEARCH AS FELT ETHICS

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ABSTRACT

Ethical sensibilities are constantly enacted in design practice and are vital to our understanding of design epistemology and knowledge production. My research develops the concept of felt ethics – an attitude of somatic, critical, and reflective attentiveness towards how our ethical sensibilities shape design practice. Through unpacking the ethical positions implicit in somaesthetic interaction design, I develop a theoretical understanding of ethical sensibilities as fundamentally relational and co-constitutional; shaped by factors such as our relationships with others, society, culture, politics, technologies, and materials. Felt ethics is an approach to actively engaging, cultivating, or deconstructing our ethical sensibilities within design practice. It consists of a processual cultivation of ethical sensibility through analytical, pragmatic, and practical engagement, an ongoing critical attentiveness to the limits of our bodies and lived experiences, and the rendering visible of our ethical practices as a matter of care.



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THE RIGHT TO OUR DIGITAL FUTURE

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ABSTRACT

As our democratic institutions struggle to keep up with the rapid pace of technological development, it is crucial to reclaim our right to a more just digital future. The erosion of the public sphere is accelerating, and the design field is increasingly dominated by forces that prioritize profit. However, it does not have to be this way. By designing digital technologies that optimized for public value and collective participation, we could create a more transparent, engaged, and informed society. Data-driven tools could aid in decision-making processes that served the public interest. This study will explore the role of participatory design and user-centered approaches as a component for public interest technologies. By moving away from the tools of surveillance capitalism and designing tools that empower the public and fulfill citizens' needs, we can mediate, facilitate, and negotiate a collective future that benefits us all.



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DESIGN RESEARCH FOR HUMAN AUGMENTATION: EXPLORING AND DESIGNING BEYOND HUMAN HORIZONS

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ABSTRACT

Human Augmentation concerns the design and implementation of body-integrated technologies to substitute, assist or augment the natural human cognitive, physical and sensorial capabilities. The field is primarily driven by a technology-centred perspective, providing solutions to temporary or permanent impairments that address immediate user needs (i.e., functionality and usability). However, enhancing human abilities beyond their natural limits does not solely require solving everyday problems, but building new ways of being human. This undertaking necessitates a consideration of how body enhancements affect users' sense of identity, embodiment, and perception, which is particularly relevant in the context of disability studies. Investigating the limitations of current human-centred design tools and methods, the research explores case studies, scientific contributions and experimentations at the intersection of Design Research and Human Augmentation. Opening the discussion on this blank space, the research aims at developing a Human Augmentation Design framework for the design and implementation of human-augmenting technologies.



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MAKING AWARE: DESIGNING TO MAKE THE INTANGIBLE VISIBLE

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ABSTRACT

If we make intangible experiences visible in the context of transformative education, we will become more aware of these experiences and make sense of them in new ways—which will permit deeper learning to take place. This short paper presents an overview of my PhD in Design for Transformative Education (at Monash University, Melbourne), through which I ask: How to make intangible experiences that occur during transformative learning visible? I explore this question by bringing embodied awareness to design through a method-pedagogy I call *Awareness-based Design*—drawing on methods from practice-based design research, phenomenology and auto-ethnography. Based on the analysis of surveys and interviews from workshops with K12 teachers in India (in-person) and higher education students in Chile (online)—I ultimately propose a set of literacies, comprehensions and sensitivities towards becoming aware and making sense of embodied, relational and subjective experiences.



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PLAYFULNESS: AN INVALUABLE TOOL IN TRANSFORMATION DESIGN RESEARCH

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ABSTRACT

My research looks at Active Ageing from the cultural contexts of India and Germany. Here I am enquiring about the role of Playfulness in Social Transformation Design. The playful possibilities offered by Lego blocks were used for information collection. The following analysis of data shed light on the significance of Engagement in the life and living of elderly in the age group 60 and 75 years. This has resulted in the creation of *Innernetz*, a mobile communication system. Using this, the participants could make playful exchanges on certain aspects of their lives, in the form of narratives, through a process mediated by design. Through these discourses one is anticipating an exchange of ideas and experiences which could make a contextual transformation to lives of elderly. In NORDES I will be sharing the mapping of play systems and a hypothetical *Innernetz* exchange for a broader discussion and feedback.



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A SYSTEMIC DESIGN APPROACH TOWARD RADICAL SOCIAL PRODUCT-SERVICE SYSTEMS

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ABSTRACT

In today's world, there is an ever-growing need for interconnected and holistic methods and approaches to address complex problems, such as homelessness, climate change, poverty, and education. Even though various design fields, including systemic design and PSS design, have of late started encountering these complex problems, ongoing debates persist about the existing approaches and the designer's role within these approaches.

In light of this debate, this research wants to bridge the gap between the systemic design methodology and PSS design methodology to address complex and systemic problems with a focus on radical new product-service combinations. While systemic design uses a holistic and collaborative approach, it lacks creativity in generating solutions.

Conversely, PSS design focuses on idea generation and implementation but often results in solutions lacking novelty. This thesis' aim is a novel approach that is broad enough to grasp complexity, creative enough to stimulate implementation, and context-specific, avoiding a reductionist step-by-step guide.



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THE ILLUSIVE TYPE: HUNTING TYPOGRAPHIC SIMULACRA

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ABSTRACT

Typically, when evaluating iconic typefaces, we investigate the degree to which they communicate well-established connotative narratives. *Helvetica*, for example, is an icon of simplicity and clarity and so, is applied across various designs to exude similar tones. *Bodoni*, a showpiece of Neoclassicism, detailing and adornment facilitated by technological advancement during the 18th century Industrial Revolution, often appears in designs suited to premium brands. Iconic typefaces such as these are tied to their symbolism; it appears that their symbolic ‘myths’ have ‘always been so.’ As I demonstrate however, there are examples of iconic typefaces whose myths are in fact entirely fabricated, illusory, ‘borrowed’ from the origins of other media, to the extent that they appear more real than their true historical origin. They are, I argue, examples of Handikind’s simulacra.

While it is possible to argue that typographic simulacra are deceptive imposters, in this paper, I argue that they may in fact also offer designers a way to look at and apply iconic type that breaks with clichéd connotations attached to it. Simulacra can offer an absence of narrative; a clearing out of sorts, whereby designers generate new connotations – breathing new life into staled typefaces.

INTRODUCTION: LIMIT ON TYPOGRAPHIC MYTHS

“Typefaces are rich with the gesture and spirit of their own era ... Letterforms frame the message; they place content in historical and cultural context.” (Rock 1994).

Rock’s view summarises a relatively long-standing and by now widely held view of typography as symbolically rich, rhetorical media. As graphic signatures of our culture, typefaces embody rich historical landscapes as well as social, cultural and technological practices of any given era (Heller 2001). As designers know, when electing a typeface to sign a brand, *Helvetica* is often a safe option since it signifies a sense of ‘modernity’ and ‘professionalism’. On the other hand, if the intention of a design is to suggest rebelliousness, a designer might overlay distorted letters over body copy, a few degrees off the horizontal axis and have it bleed off the side out the margin. Alternatively, a designer might opt for *Bodoni*’s luxurious variegated serif, set in gold foil for the logo of a fashion brand. Or, if they are attempting to convey the idea of ‘poor design’ they may elect *Comic Sans*. For craft beer labelling, a designer may opt for a ‘uniquely’ hand-crafted typeface whereas if the beer brand has historical provenance, an ‘established in’ moniker, set in one of the *Blackletter* variants may be a wise choice. For a spare-themed film poster, geometric, condensed letterforms that are widely tracked is usually a safe bet, and for a horror, a spiky or blood-soaked typeface will do. And if the goal is to elevate a brand to ‘global’ status, a designer may seek to subdue visual peculiarities within a typeface to blend in with the rest of the nice, round, pleasant letters pervading the global landscape at the moment (Figure 1).

There are indeed thousands of examples of these sorts of connotative typefaces, of typefaces that embody



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HANDLE WITH CARE: DEMANDING CARE BY DESIGN

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ABSTRACT

In today's material driven society, we have more things than we can care for emotionally. The objects that make up our material everyday are simply not designed for emotional care and we miss out on establishing a significant relationship with them. Care is a fundamental human behaviour that can define the way humans and non-human objects interact. Humans are predisposed to project human emotions and beliefs onto *any-thing* to rationalise and process their surroundings. Because of this, care practises between consumer and product can support a lasting relationship between the two to explore an alternative material consumer existence. This PhD research creates and analyses artifacts that demand care by design to aid in meaningful interactions with the objects of our everyday. These objects demand our attention, and, in some cases, they demand our affection. This is achieved through the objects materiality and function by design to generate emotionally intelligent objects.



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DESIGNING FOR TRANSFORMATION IN ECOLOGIES OF EMOTIONAL EXPERIENCES

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Recently, the focus in research on service design has shifted from designing desirable customer experiences to supporting transformation in complex service systems. While this systemic turn offers advantages, it may neglect service design's human-centered origins by underemphasizing emotional experiences. As both service and systemic change are value-laden, evoking diverse emotions among involved actors, it's crucial to integrate emotional experiences in systemic service design practices. Using a service ecosystem design framework, the PhD project presented draws on emotion and systems theories to support an integrated way of transforming service systems that accounts for their impact on multiple actors. The research includes a reflexivity lab, co-design workshops, and participatory service design projects in a child welfare setting. The project aims to support more nuanced approaches for designing with people and systems, bridging current experiential and systemic perspectives, and offering insights for service design practice and interdisciplinary fields engaged in systems change.



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EXPLORING AND ANALYSING GLASSBLOWING PROCESSES: CASE STUDY ON MOVEMENT

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ABSTRACT

Handcrafted glass has become an endangered skill. Prerequisites for glassblowing practices that allowed the celebrated 20th Century Finnish Design Glass to emerge and excel no longer exist. The versatile glassblowing skills, along with the number of professional glassblowers have decreased due to structural changes of the glass industry in Finland. This doctoral study undertakes the challenge to make glassblowing processes, and its actants, visible. Through practice-led and participatory investigation on what human and non-human actants are represented in the practice of glassblowing this study adds to and participates in the contemporary, international discussion in design and craft research. This study shares a post-humanistic understanding of glassblowing being more-than-human activity. The current phase of this research explores what kind of movement, and why, happens in glassblowing processes. The expected outcome of this research is to strengthen the role of handcrafted glass as part of the education in the field of design.



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LIGHTING DESIGN FOR INDOOR HYDROPONIC SYSTEMS

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ABSTRACT

Due to growing urbanisation and the world's urban population, access to natural environments, in city areas, is increasingly limited. Here, lifestyles lead to spending much of time indoors and, this condition was exacerbated by conflicts and pandemics. In this context, designers reflect on new ways of re-establishing connections with Nature. Hydroponic systems represent a possibility for restoring this beneficial contact and a way for the realization of sustainable food production. My research, in collaboration with SLAMP, will investigate the role of light in indoor hydroponic systems. Through an interdisciplinary approach will be stimulated the convergence between bio-inspired systems with those more technologically advanced, for the design of an integrated lighting system that enables optimal living conditions for plants and humans. Currently moving in a preliminary research phase, the aim is, with the support of experts from different fields, to realize a prototype, analyse its effects and, finally, disseminate the results.



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DESIGNING WITH UNCERTAINTY - FINDING METHODS TO EDUCATE DESIGNERS TO CRITICALLY ENGAGE WITH AUTOMATED DESIGN TOOLS

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ABSTRACT

In this age of automation, design decisions are built into algorithms and data-driven AI's that are too complex to understand for non-specialists. This raises the question of *what-else* graphic designers can do, that cannot be performed by AI-powered design tools. The aim of my PhD-project is to develop methods to activate and use subjective sensory experiences that cannot be coded into an algorithm. It seeks to equip designers with the necessary knowledge, skills, and theoretical tools for designing within a context of fundamental uncertainty about their tools and the social and ecological effects of their designing activities. During NORDES'23 I will organise a co-creative event of collective research-creation around the topic of uncertainty. In this encounter, we will play with the idea of future designers as prompters for highly advanced automated software and explore through subjective sensory experience what it means to prompt but also to be prompted.



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MOVING WHILE DOING: IN SEARCH FOR ALTERNATIVE NARRATIVES OF MOVEMENT

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ABSTRACT

What does it mean to move or be physically active? Physical activity is usually addressed from a health perspective and mainly referred to in the context of sports, physical education, exercise and training. How would adding new perspectives and making movements visible in activities where movement is not in focus contribute to what we know about movement and physical activity? By focusing on movements that are considered mundane and that we are not aware of, or movements that otherwise go unnoticed, this thesis explores how finding, making visible and giving these movements importance could contribute to adding to the understanding of what movement and physical activity is and could be.



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SENSORY NOURISHMENT IN FASHION DESIGN PRACTICES

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ABSTRACT

The sensations in our environments can be experienced at amplified levels by many neurodivergent individuals, which has a profound impact on their well-being. Clothes are our most immediate environment, yet fashion design practices rarely consider the impact of the sensations they craft. The first phase of this doctoral research employed sensory ethnography to collaboratively explore the lived sensory experiences of 30 neurodivergent individuals with their clothing. A series of sound recordings demonstrate the sensations crafted through the practice of wearing: the kinaesthetic - tactile - sonic dialogues between clothing and the moving body. The first phase concluded that participants have a deep desire to access universal emotional experiences such as comfort, freedom, and self-expression. In the second phase, a series of iterative garment prototypes reflect how the physical manifestation of four participants' desired sensory and emotional experiences may differ from person to person, environment to environment.



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RETHINKING DATA PRACTICE FOR EEOLOGICAL FUTURES: TOMATOES AS EMBODIED DATA

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ABSTRACT

Notions of data are increasingly tied to digital databases and underlying technologies, which often translate reality into immaterial, fixed, and independent forms of representation and create untenable promises for endless economic growth in a finite material world. In my PhD, I argue that such notions can be problematic as they limit our ability to retain an entangled reality that extends beyond anthropocentrism and impacts the more-than-human world. My practice-based research with fictional artifacts and participatory workshops uses tomatoes to explore the potential of living organisms as alternative data embodying material and relational aspects of the world. This is a provocation to reconsider our current notions of data and acknowledge that data consists of various heterogeneous sources, relationships, and contexts. Such sources include not only humans and machines but also plants, animals, and minerals. This expanded understanding of the world can help us pay attention to responsibility, care, and appreciation.



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CULTIVATING ETHICS IN TECHNOLOGY DESIGN WITH DESIGN PRACTITIONERS

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ABSTRACT

There is a wide range of propositions aiming to increase ethically responsible technology design – e.g. theories, methods, manifestos, and principles. However, such initiatives from academia seem to have limited uptake in design practice. According to practitioners, a reason for this research-practice gap is a poor fit between the recommendations and how things work in real-life design practice settings. In order to address this, I have involved design practitioners in co-exploring ethics from their perspective. This aims to generate both practice-led insights and points of departure for cultivating ethically responsible design. Findings so far highlight that the cultivation of ethics in technology design practices might require a critical stance towards the current business-as-usual design paradigm where profit usually comes first. Moreover, that ethics cultivation is intertwined with multiple barriers and considerations, including habits, organizational structures, motivation and incentives, learning, culture, and identity.



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FEELING THE FUTURE CAR: DESIGNING FOR THE CO-DRIVING PLEASURE

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ABSTRACT

The advancement of autonomous driving technology has given cars increasingly perceptible artificial agency. This means that people no longer simply drive a car but instead drive with a car, which is referred to as co-driving. Co-driving subverts the sense of agency of human drivers in traditional human-car relationships, potentially affecting driving pleasure. Additionally, driving pleasure has been shown to be influenced by driving contexts. The aim of this PhD study is to investigate the design implications for human-machine interfaces to enhance driving pleasure during co-driving with dynamic needs of sense of agency. The study includes three steps of research activities: 1) gathering user insights on current driving experiences through Reflective Lifeworld Research, 2) gathering user foresights on future co-driving experiences through Anticipatory Ethnography, and 3) investigating design implications to help people achieve a satisfying co-driving experience with dynamic needs of SoA through the Research through Design approach.



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DESIGN FOR WELL-BEING IN HEALTHCARE ENVIRONMENT

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ABSTRACT

How can architecture contribute to the well-being of long-term patients, especially in hospital environments? And how can healthcare institutions (re)integrate the well-being of their employees and caregivers, be they formal (doctors, nurses, ...) or informal (close family, relatives, volunteers, ...), when planning and designing environments dedicated to care?

The project involves the universities of Liège and Hasselt (Belgium), as well as the hospitals CHU and ZOL and re-questions the architectural typologies in hospital environments (from “beds”, “rooms” and “services” to a more systemic level) and to develop innovative architectural solutions prone to answer these challenges. Thanks to the active participation of patients, caregivers and hospital staff, the research project, nourished by the epistemological and methodological approach of “Research by Design”, will hopefully contribute to enhanced living conditions and well-being in care environments, in better alignment with various stakeholders’ preferences, values and needs.



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404 ART NOT FOUND: EXPLORING THE EFFECTS OF A 'DIGITAL DARK AGE' WITHIN ARTIST-LED INITIATIVES

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ABSTRACT

Despite the potential impact of a 'digital dark age' upon artist-run initiatives (ARIs), there has been a surprising lack of research into this subject. Early ethnography through investigative interviews has begun to build an increased understanding of this group and highlighted notable areas for further enquiry, not only concerning uses of technology and archival practice, but also with regards to issues such as governance, space, funding and the inherent uncertainty embedded within these initiatives. This project aims to develop interventions which engage participants with these topics, in order to increase their visibility, encourage reflection upon existing practices, and inspire the development of strategies to lessen or circumvent the risk of loss. These interventions will be based on insights created through ethnographic work such as interviews, workshops, and cultural probes.



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INVESTIGATING STRATEGIES FOR DELIVERING CHANGE THROUGH THE PRACTICE OF CO-DESIGN WITH COMMUNITIES IN THE NORTHERN IRELAND CONTEXT

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ABSTRACT

The scale of complexities we face today, in addition to the complex historical and political environment in Northern Ireland, requires a multi-faceted approach involving a range of people from across various disciplines, sectors and lived experiences. This research seeks to create a space where, through collective imagination and co-design processes, alternative futures of possibility can be envisioned. The research focuses on three areas: how the local context might affect a co-design process, the components necessary to create a space that nurtures co-creation for social transformation, and the relational facets within a community-based co-design process. Participatory Action Research (PAR), conducted through a single-case study within a place-based community, will guide the research direction, content and output. It is expected the research will capture the creative and generative process of co-design, evidencing the benefit of co-creative methodologies in supporting communities to imagine alternative futures, and frame and develop long-term strategic goals.



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THE BLANK SPACE IN-BETWEEN RESIGNATION AND RESILIENCE: DESIGNING FOR LONG-LASTING CONNECTED SMART PRODUCTS

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ABSTRACT

Designing connected products that are sustainable is a challenge, it is particularly complex when considering the dependencies between software and hardware. A "longevity mindset" in connective products offers an alternative path to achieve more responsible design solutions. In order to have a comprehensive understanding of connected products, I review longevity concepts and strategies that are introduced in design for sustainability literature. Further, I explore the contradictions and tensions that arise in practice-based contexts as decision-making parameters in design process. Finally, by making these parameters tangible, I propose an alternative way to extend the lifetime of the connected products and enable decision-makers to engage with arising problems at a deeper level. As a result, this study informs designers and design researchers who generate strategies for longevity of connected products and contribute to the growing body of literature on connected products.



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FILLING IN THE BLANKS: RETHINKING TERMS OF SERVICE (TOS) THROUGH DESIGN

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ABSTRACT

Terms of Service (ToS) have proven to be a problematic touchpoint for regulating the ongoing relationships with networked computational things. As research into improving their usability demonstrates insignificant gains in engagement and comprehensibility, employing an approach going beyond an understanding of ToS as 2D interface becomes inevitable. In this paper, highlighting these problems, I problematize ToS for design by zooming in to and out of ToS through lenses of (auto)ethnography, programmatic research, and entanglement theories. Three practices emerge from this movement and make up my research program, aesthetics of relating: *releasing design for Terms of Trauma*, *revealing design for Terms of Entanglement*, and *reimagining design for Terms of Care*. With these explorations I introduce a conceptual shift from ToS to ToS ecosystem – *ToSphere*, and theoretical and methodological shifts from human-centered to more-than-human design. I conclude by mentioning my plans to achieve this research program and the expected contributions.



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A HAUNTOLOGICAL APPROACH TO SPECULATIVE DESIGN

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ABSTRACT

This paper introduces my PhD research which is aimed at imagining and proposing professional roles and design practices for decolonial digital futures. To imagine these futures and the practices that make and sustain them, the project builds on critique of speculative design methods to surface the coloniality supplied and replicated by its use in a (post)colonial socio-technical context. The paper delves into my focus on hauntology as a framework to understand coloniality and how designers may engage with contending histories, plurality of experiences and use it to inform their speculative process. Hauntology uses absences and uncertainty as a design material to develop an alternative, decolonial and designerly understanding of temporality in futuring. I outline my short and long-term research plans and how this alternative temporality will be used as a tool to propose an initial catalogue of design skills, competencies, and roles for building and sustaining decolonial digital societies.

ACKNOWLEDGEMENT

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AN ETHICS-AS-ACTION FRAMEWORK FOR DESIGNING DATA-DRIVEN PRODUCT SERVICE SYSTEMS

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ABSTRACT

The rising interest in tech ethics, design ethics and AI ethics highlight the need for deeper engagement with the moral dimensions of current design practice.

Following a surge of criticism on traditional consequentialist, value- and principle-based suggestions, recent studies have turned towards relational ethics as a promising alternative to capture the messy, complex and fluid characteristics of moral considerations in technical systems. This project follows these approaches, seeking to prototype new methods of ethics-as-practice for design practices of data driven technologies. I use sociotechnical imaginaries as a means of constructing alternative futures which position ethics as a contextual, situated doing, inherently embedded in design practice.

Through this combination of relational ethics and sociotechnical imaginaries I seek to develop a conceptual framework that enables designers to engage with the ethical dimensions of their work productively and intentionally in practice.



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MAKING SPACE TO CELEBRATE THE PLURIVERSE

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ABSTRACT

Current co-design practices are problematic when applied in non-western contexts as they need to become fairer, more respectful and appropriate to the flourishing of the Global South. In response, my work aims to increase co-design abilities to create pluriversal futures. Before design can be used for emancipation, it must first be emancipated itself. From this stance an inquiry arises: how could we make space to unlearn hegemonic co-design practices? In this short paper I introduce the conceptual basis of my research which integrates key elements of Critical Latin American studies and the Degrowth movement: emancipation, conviviality, care, pluriverse, and *sentipensar*. With a practice-based approach, I outline the already implemented course of research as well as my plans to further explore this conceptual framework through Situated Practical Explorations with Global South communities in Mexico. I conclude with the expected outcomes of my research having a socio-cultural shift as a meta objective.



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CRISIS-MAKING TO TRANSFORM ENERGY-RELATED BEHAVIORS FOR EVERYDAY SUSTAINABILITY

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ABSTRACT

Designing for sustainable living requires to ground the design approach on understanding people's everyday lives. Firstly, this doctoral research explores tensions and mismatched links among the key elements of people's daily energy-related practices to remediate these mismatched links through design. Also, the focus will be searching the ways of disrupting routinized behaviours of people in their daily lives. Therefore, an artefact will be created through co-creative session/s as a crisis of people's routines to disrupt unsustainable energy-related practices. Then, this artefact will also be an agent among the key elements of practices which consist of the subject (the people), their objects, and their tools used to attain their objects. Lastly, to keep being a mediator among elements of daily energy-practices and to sustain the disruption in unsustainable everyday practices, this artefact will provide a system that nudges people regularly through design to act as a sustainable person.



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DESIGN INQUIRY TO PROBE THE HOPE LABOR BETWEEN ORDERS

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ABSTRACT

Food delivery workers stranded at random nooks and corners of the city bearing a delivery bag branding the company they work for, staring at their mobile phones, have become a common site in recent years in major cities across the globe. This is the pause in the *'gig labor'* they perform while an algorithmically curated food delivery platform matches them with orders in the background, offering piecework remuneration. The amorphous algorithmic decision-making determines how long they would wait before the next order and, in turn, how much they would earn. This process of algorithmic matchmaking remains opaque for the workers while they, in their limited capacity, perform the *'labor of hope'* against it in anticipation of the next order. The paper discusses design inquiry to probe into this pause to explore and design for possibilities to support workers' efforts in achieving the monetary goals.



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PARTICIPATORY DESIGN FOR SUSTAINABILITY OF CRAFT SECTOR IN RURAL AREAS: A COMPARATIVE RESEARCH BETWEEN CHONGMING, CHINA AND FIFE, SCOTLAND

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ABSTRACT

This research project explores the value of rural-based craft practices in the sustainable development based on participatory design. A comparative study conducted between Scotland and China aims to a) promote the implementation of United Nations (UN) Sustainable Development Goals (SDGs) 8, 11, and 13; b) reform stereotypes surrounding the 'Made in China' label; c) propose a strategy for rural craft development and sustainability. The qualitative comparative study enables an understanding of sustainable development holistically. The multi-sited rapid ethnography and case study methodology have been employed to research crafts sustainability in Fife (Scotland) and Chongming (China). In this case, semi-structured interview and participant observation methods have been utilized to acknowledge the sustainability challenges of craftspeople living in rural areas. The long-term goal is to focus on the sustainable development of the craft sector, which will stimulate the creative

economy and reinforce cultural identity in the local areas.



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CRAFTING KNOWLEDGE: EXAMINING HISTORIC TEXTILE PRACTICES & CITIZENSHIP FOR SUSTAINABILITY

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ABSTRACT

A change towards more resource-conscious relations to textile resources is needed. This includes, not only industry and designers, but also citizens which is underpinned with the introduction of the concept *textile citizenship*. A concept my Ph.D. project aims to help define. The project links learnings from historic textile practices with speculative design research to shed light on future, more sustainable pathways for citizens' interactions with textile resources. *Cloth culture*, a term from textile archaeology, is introduced to describe my research area of interest. I ask: What might hands-on investigations of historic sustainable textile practices disclose about future cloth cultures? With departure in sustainable practices found embedded in museum objects, I apply research-through-design and an approach inspired by experimental textile archaeology. Through mirroring historic textile techniques, I aim to develop a bodily understanding of historic practices to shed light on our present-day challenges and future textile interactions.



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EXPLORING MORE-THAN-HUMAN DESIGN AND MAKING PRACTICES

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ABSTRACT

This project focuses on material-geography connections in design and making, based on experimental trials and processes to understand more-than-human influences. I address posthuman theories from a practice-based study on craft-design relationships, specifically felting, a traditional and contemporary way to make felt artefacts, by bringing wool (or other fibres) together. My main aim is to provide a framework on how design can shift to more-than-human approaches, learning from non-Western practices of making. To contribute to the emerging topic of designing toward non-anthropocentric perspectives, I propose case studies and examples through craft-design relationships. The theoretical parts consist of understanding design through post-anthropocentric and more-than human approaches, and acknowledging decolonial practices and worldviews. The practice-based parts include autoethnographic documentations in different geographies such as Turkey, Norway, Lithuania. This consists of both the practice of making, and the journey of engaging with felt through the agencies of motifs, geographies, and the material.



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SKETCHING AS A CRITICAL TOOL IN DESIGN RESEARCH MÉTODOS

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ABSTRACT

This research explores sketching in the context of participatory design in HCI. It utilises sketching as a language to investigate the relationship between design research methods and power, focusing specifically on collaboration. My overarching research question is: what does sketching as a critical tool reveal about collaboration in design research processes? This question is investigated by looking at how sketching may be used to make explicit certain aspects of collaboration in visual form and to engage with what they reveal about these processes. Through material practice I define an approach that brings the subjective voice in sketching to the foreground. My working proposition is that a focus on subjectivity and voice as part of the knowledge created through sketching, generates a stronger focus on positionality and this facilitates a different stance to collaboration.



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WEAVING 3-DIMENSIONAL TEXTILE-FORMS

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ABSTRACT

This doctoral research explores form-generating transformability in woven textiles. Form is embedded in flat woven textiles through minimum energy structures, combining antagonistic shrinking and stiff yarns. Conducted through experimental design research, the outcomes have included woven artefacts, methods, and frameworks. Future research seeks to understand the impact of designing at a yarn level, incorporating sustainability considerations by seeking alternatives to fossil fuel-based materials. Collaborative projects offer applications of research outcomes in specific contexts, such as zero-waste garments. It is intended that this research will produce exemplars, theory, and application examples that provide tools and techniques for textile designers. These are intended to facilitate inter-, multi-, and transdisciplinary research in which woven textile-forms offer solutions.



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ENHANCING THE IMPACT OF ONLINE STITCHING COMMUNITIES (OSC) AS TRIGGERS OF PRO-ENVIRONMENTAL BEHAVIORS FOR AMATEUR MAKERS THROUGH AN OPEN DESIGN PERSPECTIVE

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ABSTRACT

The popularization of prosumer culture, democratized mode of production through open resources and increased opportunities for rapid production, and increasing numbers of bottom-up initiatives help the rise of an era where the users have more active roles in their consumption pathways. Online stitching communities (OSC) are part of these community-initiated groups where the know-how is shared to build up a skill such as knitting, crocheting and sewing. However, their approach to and impact on circularity and sustainability seem to be rather understudied areas for creating possible design interventions. With this Ph.D. research, first, I aim to understand OSC's impact on providing pro-environmental behaviors for amateur makers through open design processes and sharing of repair, care, upcycling, and refashioning strategies. After having an understanding of how and why OSC operate, the second part of this research will be about finding ways of disseminating the impacts of these communities through design research and practice.



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A METHODOLOGICAL INVESTIGATION ON NON-DESIGNER INVOLVEMENT: FROM DESIGN TO ARCHITECTURAL DESIGN

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ABSTRACT

The user-client involvement occurs immanently in single-family housing contexts. However, prior studies show that, interacting with the user-client during the architectural service process is challenging for architects. They also face some limitations in their practice to support this involvement due to the lack of relevant methodologies, models, and tools specifically tailored for architectural practice.

A methodological investigation around non-designer involvement from design to architecture may help to rethink the architectural service experience for architects and user-clients.

Following this argument, the Ph.D. research presented here is built on two pillars. The first pillar focuses on methodological concerns regarding non-designer involvement in design from a broader perspective, to discover the mechanisms behind the tools, techniques, strategies, and methods in use, through interviews with designers and literature reviews. The second pillar transfers the knowledge gathered during the first pillar and furthers this investigation in a single-family housing context, through a co-design process.



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PARTICIPATORY VISUAL MAPPING AS A WAY TO SUPPORT MULTI PERSPECTIVE AND LONG-TERM THINKING WITHIN URBAN TRANSFORMATION

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ABSTRACT

This PhD focuses on participatory visual mapping (i.e., a methodological approach for giving an overview of complicated processes, building shared mental models, and providing abstract concepts in a concrete form) in the context of urban transformation. Urban transformation projects can lead to a more just, sustainable and resilient future for an urban area. However, reaching their full potential is challenging due to the high complexity of the themes they often address and the involvement of multiple stakeholders in the design process. More granularly, stakeholders in these projects frequently encounter two common pitfalls: adopting and applying a single human-centred perspective and thinking for the short term. In my PhD, I ask: How can participatory visual mapping support multi-perspective and long-term thinking within urban transformation? In this project, I develop visual mapping tools, try them out in participatory setups, reflect on the findings and reiterate the process.



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THE HUMAN EXPERIENCE IN A "SMART" HOME

CO-CREATING THE HUMAN-SMART-HOME RELATIONSHIP

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ABSTRACT

To support the green energy transition in (northern) Sweden, the overall objective of this PhD research project is on reducing the energy consumption inside residential homes. Smart home systems can passively help both save energy and increase comfort in homes, but there is a need to problematise the restriction of human interaction with these systems. Alongside issues of human autonomy, failing to include the human can inhibit the potential benefits of smart technology, or even cause the technology to worsen the situation it aims to improve. This includes residents not being able to control their indoor climate, potentially leading them to take other more energy-costly measures instead. The proposed approach is codesign of products and systems that are smart *together with* users, and not *instead of* users, where an emphasis on mutual interaction should lead to both good user experiences and reduced energy consumption.



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Exhibitions



EXHIBITIONS

A Sketch Challenge: The Role of Form-Giving within the Design Process of Technology-Driven Products

Fazil Akin, University of Liverpool

Laser-cut acrylic, digital print on paper, color pens
Participant contributions by sketching
Related to Doctoral Consortium contributions by Fazil Akin

What Can Visible Mending Teach Us?

Mary Anne Beecher, Ohio State University and Hazal Gumus-Ciftci, Arizona State University

Printed poster, stitching

Hologenome biodata hacking lab

Yongrao Du, University of the Arts London

Prints, objects, video
Audience participation through reflective writing
Related to Doctoral Consortium contributions by Yongrao Du

Making space to celebrate the pluriverse

Xaviera Sánchez de la Barquera Estrada, Umeå University

Large format print, corn-based tamales
Related to Doctoral Consortium contributions by Xaviera Sánchez de la Barquera Estrada

Investigation of Geopolymers within the Ceramics studio

Priska Falin, Aalto University

Geopolymer artefacts
Related to full paper by Johannes Kaarakainen, Priska Falin, Luis Huaman, Maarit Mäkelä and Nathalie Lautenbacher

No name

Luis Garcia

Related to Doctoral Consortium contributions by Luis Garcia

Co-designing Augmented Humanity through Fiction

Camilla Gironi, Sapienza University of Rome

Cards
Audience invited to card-sorting
Related to Doctoral Consortium contributions by Camilla Gironi

A systemic design approach toward more radical social product-service systems

Maud Gruyters, Alexis Jacoby and Ivo Dewit

Related to Doctoral Consortium contributions by Maud Gruyters, Alexis Jacoby and Ivo Dewit

EXHIBITIONS, cont'd

Hunting for Ghosts and Histories: Design Haunted by Progress

Maria Göransdotter, Umeå University, Li Jönsson, Malmö University Thomas Laurien, Gothenburg University, Kristina Lindström, Malmö University and Åsa Ståhl, Linnaeus University

Prints, ice-cream on sticks, strings, clothes pegs, paper, pens

Audience participation in identifying old and new ghosts to haunt design.

Emotionally Intelligent Objects

Helga Halldórsdóttir, University of Borås

Artefacts, objects

Interactive exhibition

Part of the doctoral consortium process

Related to Doctoral Consortium contributions by Helga Halldórsdóttir

De-Dramatizing Services through Design

Audun Formo Hay, Oslo School of Architecture and Design

Poster

Related to Doctoral Consortium contributions by Audun Formo Hay

Prompt me? Prompt you! Designing with uncertainty co-creative event

Simona Kicurovska, University of Humanistic Studies

Co-creative session

Related to Doctoral Consortium contributions by Simona Kicurovska

Data, tomatoes and ecological futures

Youngsil Lee, Edinburgh College of Art

Illustrations, leaflet, notebook, tomato

Audience participation through notes in notebook

The design ethics workshop – a co-design format for ethics cultivation

Sharon Lindberg, Stockholm University

Poster, slidedeck

Interactive poster

Related to Doctoral Consortium contributions by Sharon Lindberg

Urban Recipes

Yuxi Liu, Delft University of Technology and Seda Özçetin, Umeå University

Printed fabric, booklets, postcards

Related to exploratory paper by Yuxi Liu and Seda Özçetin

Rank your favourite ADAS Features

Peng Lu, Politecnico di Milano

Interactive poster

Related to Doctoral Consortium contributions by Peng Lu

Make the data alive

Louise Masciarelli, University of Liège

Poster

Related to Doctoral Consortium contributions by Louise Masciarelli



EXHIBITIONS, cont'd

Artist-Led Initiatives: A Research Archive In-Progress

Gareth McMurchy, Newcastle University

Artefacts

Related to Doctoral Consortium contributions by Gareth McMurchy

Alternative Futures of Possibility

Katrina Newell, Ulster University

Poster

Related to Doctoral Consortium contributions by Katrina Newell

Resignation and resilience

Ayşegül Özçelik, Umeå University

Artefact

Related to Doctoral Consortium contributions by Ayşegül Özçelik

This is a ToSsphere

Seda Özçetin, Umeå University

Fabric, printed Terms of Service, poster

Related to Doctoral Consortium contributions by Seda Özçetin

Design skills as civic skills: A lifetime of learning and practising participation

Silvia Pau, University of the Arts London and Natalia Villaman, University of Helsinki

Interactive poster

Magic touch – Gestaltology as aesthetic experience and embodied cognition

Alessandra Di Pisa, Linköping university and Robert Stasinski, Stockholm university

Poster

Missing Species

Margaret Rynning, Kristiania University College

Handmade plant based paper

Discursive object

Related to full paper by Margaret Rynning

Data as Power: Unlocking Gatekeeping, Chokepoints, and Dependency

Pamela Gil Salas, Umeå University

Poster

Related to Doctoral Consortium contributions by Pamela Gil Salas

Who or what will serve you in the future

Resat Sasik, Luleå University of Technology

Interactive poster

A Comparative Study of Craft Sustainability in Rural Areas: Chongming, China and Fife, Scotland

Peining Sheng, Edinburgh College of Art

Interactive poster

Related to Doctoral Consortium contributions by Peining Sheng

EXHIBITIONS, cont'd

Crafting Knowledge: Examining historic textile practices & citizenship for sustainability

Trine Skødt, Royal Danish Academy

Embroidery, sewing and embroidery equipment, printed booklet.

Related to Doctoral Consortium contributions by Trine Skødt

Exploring more-than-human design and making practices

Berilsu Tarcan, Norwegian University of Science and Technology

Related to Doctoral Consortium contributions by Berilsu Tarcan

Unwritten insights. Experimenting with more immersive sense-making techniques in service design projects

Roberta Tassi, Oblo

Poster, cards

Sketching as a critical tool in design research métodos

Elvia Vasconcelos, Eindhoven University of Technology

Handdrawn sketches, posters, embroidery fabric pieces

Participant contributions of embroidery and live embroidery

Related to Doctoral Consortium contributions by Elvia Vasconcelos

Flex

Kathryn Walters, University of Borås

Woven textile and video

Audience interaction with water and shape-changing samples

Related to Doctoral Consortium contributions by Kathryn Walters

Follow the thread: mapping out online craft communities

Lilyana Yazirlioğlu

Poster

Related to Doctoral Consortium contributions by Lilyana Yazirlioğlu

Future Homes for Sustainable Living?

Martin Åhlén, Luleå University of Technology

Poster

Related to Doctoral Consortium contributions by Martin Åhlén





Workshops



CONQUERING THE SILENCE, EXPLORING THE UNCOMFORTABLE TOGETHER: A COLLECTIVE EXPLORATION OF DISCOMFORT AS A DESIGN RESOURCE

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ABSTRACT

Building on feminist HCI, care ethics and soma design, we invite design practitioners to collectively explore otherwise hidden and isolating experience of discomfort. By discomfort we understand a range of first-person experiences: from physical pain to a slight sense of unease related to social interaction. The purpose of the workshop is to explore uncomfortable feelings and sensations, which are present in our bodies but whose existence is rarely acknowledged and shared. We will engage in the exploration through a one day workshop combining bodily exercises with collaborative design activities. The first goal of the workshop is to materialise corporeal discomfort and experiment with different ways of articulating experience. The second goal is to explore and change *the process* of designing together through. We will pay attention to the uncomfortable in order to develop the ways of working together that are based on our shared vulnerabilities rather than privileges and shed light

on how collective immersion of bodily discomfort could spark a caring and generative design process.

INTRODUCTION

Pain can be one of the loneliest experiences — not only excruciating but also extremely personal, context-heavy, and isolating because of the lack of means of expression, the absence of shared language (Scarry, 1987) and the social discomfort or reluctance of sharing pain. Pain is in the body, but it is hidden, confined, unspoken. Not only this is due to the inherent limitations of our language, but because we have been trained within the limits of ‘success narratives’ (Howell et al., 2021) on hiding the uncomfortable and interrupting the rhythms of our bodies with the purpose to sustain the flows of the social. We have been trained on putting the struggle and discomfort to the backstage of the everyday.

In this workshop, we will draw on the feminist ethics of care (Tronto, 1993; Puig de la Bellacasa, 2017) to explore the potential of pain and discomfort within a



design process centered around the generative capacity of non-habitual and uncomfortable somatic experiences. While the experience of discomfort and pain is highly subjective, most often inexplicable, and unshareable, it is potent at bringing our attention to neglected body parts or memories and offering new bodily perceptions with estrangement (Wilde et al., 2017). The workshop aims to contribute to the body of work in HCI investigating the significance of uncomfortable bodily experience (Benford et al., 2012; Benford et al., 2018; Benford et al., 2021; Tennent et al., 2020; Byrne et al., 2020; Beuthel & Wilde, 2017; Demir et al., 2022) and visceral discomfort (Levisohn et al., 2007; Maurer et al., 2017). Placing a social layer on top of this, we seek to understand the importance of collective discomfort in creative design work.

We deem the exploration of discomforts essential for building novel ways of designing and interacting with each other in a way that is based on care for inherent vulnerabilities of our bodies rather than the ideas of autonomy, competition and invincibility. As Gilmore writes, paying attention to pain and discomfort enables us to realize the porousness of “I” as a detached self from the others and can be a fruitful start for caring for more-than-human relationships (GILMORE, 2012). With this attention we adhere to feminist developments in HCI (Campo Woytuk et al., 2020; Almeida et al., 2020; Alfaras et al., 2020; Vallgård et al., 2022; Homewood et al., 2019) and the calls for advancing designs that stay with the trouble (Søndergaard, 2020) rather than swatting it away. Pains and discomfort – in various degrees and incarnations (from the pain of childbirth to injury related pains) – are the constants that cannot be completely avoided, yet they are not easy to talk about. The propensity towards computational abstraction and seamlessness has made it even easier to conceal other’s pain and suffering (Tomlinson, 2020). We ground our exploration in the idea that we need to be accepting to pain so we could interact with each other (within design and outside of it) with a respect to the possibilities of having and causing pains and so we could treat our shared vulnerabilities with care.

WORKSHOP CONTENT

Within this workshop we will turn the equation upside down and work on bringing attention to painful experiences and sharing them with others. We will focus on painful aspects of our lives, felt experiences of bodily discomfort with ourselves and the others, and explore them by articulating and them through materials. We will use pain and discomfort as resources for design with the intention to make discomforting design possible and develop authentic ways of interacting with each other within the design process – the ways that are respectful to our shared vulnerabilities

and painful experiences rather than the unreachable ideals of invincibility, privilege, and autonomy. Without the intention of exploring the extreme manifestations of pain related to physical disability, severe injury and traumas, we want to focus on the discomforting experiences of our bodies that are always present even in the most ordinary circumstances (because of chronic conditions, social fears or simply going through menstrual cycle) without being articulated.

We invite design practitioners to join us in our collaborative exploration of pain through bodily practices and first person design methods (Höök et al., 2018). The one day workshop will consist of two parts: we will first engage in bodily activity to explore discomfort individually and collaboratively. We will start from engaging into gentle body work that is inspired by yoga practice and to then add elements that evoke light discomfort. We will then use photography as a tool for eliciting felt sensations that may emerge during the bodily activity for design use. In the second half of the day we are going to use the elicited experiences as a resource for designing artifacts, wearables, or experiences that could materially externalize their felt discomfort or that could attend to pain or discomfort. We are not planning to induce any strong sensations of discomfort, yet we will try to redirect the participants’ attention to sensations that are already and inevitably present in our bodies without us necessarily noticing them.

The workshop seeks to traverse three ambitions. First, we want to explore the social discomfort emerging from interpersonal bodily interaction and from difficult experiences of going through a somatic pain (e.g., chronic pain, menstrual cramps, mental depression, etc) in social settings. In doing so, we will look into subtle expressions of discomfort such as laughs or gestures that indicate the need to share uncomfortable experience with others. Secondly, we want to experiment with means of expressing pain and documenting our collaborative experience through photo elicitation (Harper, 2002). Lastly, we are interested in how materializing discomfort could bring attention to neglected bodily experiences and provide a caring space of experiencing and expressing discomfort in social situations.

RESEARCH BACKGROUND

The workshop and our interest towards explaining pain through design is grounded in the methodology of soma design (Höök, 2018), feminist ethics of care (Tronto, 1993; Puig de la Bellacasa, 2017) and feminist HCI (Søndergaard, 2020; Howell et al., 2021; Bardzell & Bardzell, 2011). The workshop interest towards using body work is grounded in soma design’s exploration of

non-habitual movements (Benford et al., 2012; Umair et al., 2019; Benford et al., 2018; Demir et al., 2023); questioning the artificial dichotomy between mind and the body, rational and felt experiences (Garrett et al., 2023). Using a first person design perspective, soma design also directs our attention towards the generative potential of breakdowns in collaborative work of a design team (Popova et al., 2022).

Our exploration joins the ongoing developments of feminist-oriented HCI. Howell and colleagues have problematised the distinction between success and failure to challenge the narratives of ‘success’, drawing attention to ‘failures’, ‘breakdowns’ and otherwise the problematic aspects of design work that often remain unreported when we strive to sustain the ‘tidy’ design narratives (Howell et al., 2021). In a similar vein, Balaam and coauthors have explored the concept of emotion work and the uncomfortable experiences as an integral part of design research work that often remains unreported and unarticulated (Balaam et al., 2019). Devendorf, Andersen, and Kelliher suggested Design Memoirs as a method to approach the uncomfortable yet rarely articulated publicly personal experiences around parenting (Devendorf et al., 2020). In our previous work we analyzed how carefully analysing breakdowns within collaborative design work can help to develop purposeful vulnerability within a design team with the intention to advance a more authentic and caring way of designing together. This line of research suggests that reapproaching failure, breakdown, and discomfort is important for creating better understanding of potential harms and advancing design justice.

Overall, the workshop motivation is built on our interest to feminist ethics (Lorde, 2022) that promotes escaping from the ‘either-or’ ways of existence and resolving the dichotomies between failure and success, rational and felt, vulnerability and power, and – as we want to add to the list: between pain and joy.

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BRINGING THE FOREST AROUND THE TABLE: HOW TO SUPPORT OTHER-THAN-HUMAN PARTICIPATION IN URBAN REGENERATION PROCESSES THROUGH DESIGN?

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ABSTRACT

Complex systemic challenges such as urban regeneration projects that strive for a positive long-term impact, must take into account views and needs of multiple stakeholders, both of humans and other species (e.g. animals, plants, landscapes etc). While human actors can directly engage and articulate their own perspectives, other species depend on humans to represent them. Humans who seek to represent other-than-human needs must be equipped with relevant knowledge, empathy, and imagination to do so. Additionally, they can benefit from having communication and representation techniques to support them in this task.

While participatory design suggests a rather rich toolkit to support the joint work of stakeholders, the representation of other species in this context is understudied. The purpose of the workshop is to address this gap. Through a combination of hands-on activities and discussions, participants will have the opportunity to collaboratively explore and reflect on how design can support the participation

of multi-species actors in participatory workshops in urban regeneration projects.

WORKSHOP DESCRIPTION

With the increasingly urgent global environmental crisis and its impact on all planetary systems, the call for sustainable futures is more important than ever (IPCC 2022). As the global population becomes increasingly urbanised, cities have emerged as both the roots of unsustainability and the arenas to address it. Problems associated with the many interrelated sustainability issues such as climate change, economic underdevelopment, and social inequality are essentially urban in nature (Evans et al., 2016). Being home to a majority of the world's population, cities have the potential to drive significant change in sustainability practices. Their role as an experimental field, institutional interface, and focal point for reworking socioecological relations and sustainability is intensifying (Sachs Olsen, 2022).

In urban regeneration initiatives that aim to further urban sustainability, the future is constantly in the making, providing opportunities to collaboratively re-imagine how things could and ought to be (Dunne & Raby, 2013, Neuhoff et al., 2021, Zohar & Neuhoff, forthcoming). However, there is a widespread shortcoming that often prevents these initiatives from reaching their full potential, that is to say, to re-imagine potential futures as those of humans alone (Bridle, 2022). Over a long period of time, we perceived the city as a 'humanist citadel' (Franklin, 2017, p. 1), i.e. as a place that secures human needs and undermines the needs of other species. Regeneration processes provide

us with the opportunity to rethink this human-centred approach.

In recent years, entities such as rivers, forests, wildfires, weather systems, animal flocks and viruses, to name a few, have started to enter into urban political life. They are no longer seen as ‘neutral’ subjects, but as active, lively, fragile, powerful, and interconnected bodies that have been brought into the spotlight by the global environmental crisis (Franklin, 2017). This shift in perspective creates new subjectivities and sensibilities, recognizing the existence of pluriversal worlds and creating new relations with other-than-human entities from a position of humility and care, rather than superiority. This approach, scholars agree, is crucial to our long-term survival (Bridle, 2022, Akama et al., 2020).

In parallel, other-than-human design approaches have emerged, being recognized for their potential to expand our understanding of the perspectives and needs of non-human species (Sachs Olsen, 2022). As a response to the realization that “the environmental crisis is a design crisis” (Escobar, 2018, p. 44), the design community has begun to critically reflect on the fact that participatory design often undermines other-than-human participation (Akama et al., 2020), multi-species equity, and an understanding that human existence is intertwined with the lives of other beings (Haraway, 2007, 2016). By doing so, other-than-human design (sometimes also referred to as more-than-human, non-human, or multi-species design) is rooted in a relational worldview that acknowledges and values the interconnectedness and interdependence of all entities.

Applying an other-than-human paradigm in participatory design is a matter of broadening the scope of stakeholders involved in the design process. But perhaps even more importantly, it is a matter of framing a new ontology. Whilst traditionally, participatory approaches concerned a human-centered way of knowing in a human-centered world (Bridle, 2022) an other-than-human paradigm needs to ask: how can we create a multi-species way of knowing in a multi-species world? But this is not the only question that emerges, as other scholars demonstrate (Clarke et al., 2019, p. 61):

“How do we make the experiences of non-human others palpable? How do we hear, and how do we encourage others to hear, the non-human voices? How do we bring them into participatory processes [...]? Most importantly, how do we convince others, who are less familiar with such perspectives, that decentering human privilege is important and relevant for the future of interaction design?”

Then, we also need to ask how the knowledge, needs, and lived experience of non-human stakeholders can be communicated, or, to formulate it in the words of Sachs Olsen (2022 p. 322), how we can “enable other species to have a say regardless of their capacity to speak”. Thus, applying other-than-human approaches in participatory design calls for rethinking 1) the ways of creating knowledge, understanding, and empathy; and 2) the ways this knowledge, understanding, and empathy is/can be conveyed to other stakeholders and external audiences. A process of mediation is needed since non-humans speak a different language than the common language of those (humans) more routinely involved.

In this workshop, we will collaboratively explore how to support other-than-human participation in urban regeneration processes through design. While human actors can directly engage and articulate their own perspectives, non-human actors depend on humans to represent them. Humans who seek to represent non-human needs must be equipped with relevant knowledge, empathy, and imagination to do so. Additionally, they can benefit from having communication and representation techniques to support them in this task. Participatory design suggests a rich toolkit to support the joint work of stakeholders, however, the representation of non-humans in this context is understudied. The purpose of the workshop is to address this gap.

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FABULATING FUTURES FOR FLOURISHING AND VIBRANT WORLDS

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ABSTRACT

This one-day workshop will explore fabulations in design research. Bringing together design researchers and practitioners in hands-on exploration and critical dialogue, we will explore emerging practices and potentials of using fabulations in futures-oriented and exploratory practice-based design research. Drawing on fabulations' relations with feminist technoscience and more-than-human concerns, we seek to

understand if and how the practice of fabulating can contribute to designing vibrant worlds that can flourish in new ways.

INTRODUCTION

What the future may bring is a core consideration for design. Researchers have long claimed that one of the things that is being prototyped in design is the future (Tonkinwise 2015), building worlds and systems that drive future lifestyles and behaviour (Light et al 2015, Coulton et al 2017). This workshop seeks to try to make this futuring activity to be more intentional as well as more generative—not only foreclosing possible futures by producing particulars but also by opening up



possibility, bringing new visions, conceptions, and concerns into the frame of design. Put simply: what futures are we designing, and how are we doing it? We propose that one way to broaden this frame is through fabulation as a practice, technique, or methodology for creating visions of the future that can be conscious, conscientious, and caring.

Envisioning worlds that offer new possibilities is essential, especially at this moment in the Nordics. Shifting power relations, new forms of economic models, shifts towards public-private partnerships in welfare models, rapid emergence of “disruptive” technologies like AI and blockchain, and novel forms of service provision are transforming how states, communities and caregivers plan and improve living conditions of the population. These challenges thus require new forms of participation to ensure that products, practices, services, and emerging technologies are designed and adopted to support citizens in equitable ways. Further, as the rhetoric of technological solutionism becomes more richly embedded into how we think of design’s capacity to create futures, it may be necessary to resist solutionist impulses entirely, envisioning radically different futures that call fundamental concerns into account. Mark Fisher describes *capitalist realism* as a superseding logic of everyday life, one where the fundamental presence of capitalism is so deeply assumed that any alternative becomes unimaginable (Fisher 2009). Likewise, design might be in a similar danger of becoming trapped by user-centered design, design thinking, apps, user experience, and expedient metrics that take already-existing agendas as a given. As designers, design researchers and design educators, we are experienced in doing and imagining design as a form of future change, yet with increasingly complex challenges and uncertainty, we argue that there is a need to radically expand our futures-oriented design approaches for envisioning lively and thriving worlds.

This workshop will explore *fabulations* (Haraway, 2016) in design practice and practice-oriented design research. We will explore how fabulations and the practice of fabulating can be used to collaboratively imagine futures that encourage broader forms of participation in society, building stronger connections among citizens, and ultimately fostering more resilient futures. *Fabulation* is part of a new approach using storytelling in design futuring, borrowed from STS and feminist technoscience, oriented towards alternative forms of critical and radical world-making. However, the use of fabulation in design futuring, while having enormous potential in being able to bridge contemporary challenges of participation, is currently tentative and understudied. How should or could fabulation be deployed within collaborative design to imagine new worlds for design?

BACKGROUND

In recent years, design research has shown increasing interest in design futuring, critical feminist technoscience, and more-than-human concerns. For instance, recent work calls for expanding approaches to design futuring (Kozubaev et al., 2022), underscores the importance of feminist technoscience for imagining alternative futures with design (Søndergaard, 2020), and expanding conceptions of users and human bodies to include more-than-human concerns (Homewood et al. 2021). Design futuring, critical feminist technoscience, and more-than human concerns garner increasing interest in part because they offer ways to both resist design solutionism *and* explore avenues for engaging highly complex, challenging societal problems such as capitalism and unsustainability in relation to designing and living with new services, systems, products, and technologies.

An emerging practice addressing these topics, is fabulation. In design research, fabulation has been used to retell ignored stories from the past (Rosner, 2018) to backcast from the future into the present (Wilde et al., 2021), and emphasise moral values using non-human archetypes (Russell et al., 2022). Through imaginative collage-making, illustrations and written short stories, fabulations have inspired joyful reimagining of bodily fluids (Helms et al., 2021) and biodata (Tsaknaki et al., 2022). Often, such approaches are inspired by speculative design but deviate by using critical and feminist commitments and participatory approaches (Forlano et al., 2016; Mazé, 2017). Building on and contributing to these emerging threads, we see fabulation as a mode of generating possible futures that can complement ongoing participatory design process, particularly if combined with critical and collaborative world-making activities that could break away from the sometimes-inevitable feel of current imaginaries of human-technology relations (Markham 2021). Our aim is to contribute to this scholarship by inquiring into Haraway’s notion of speculative fabulation, as well as how it could apply to different forms of design research and practice in diverse issues and contexts.

Speculative fabulations are particularly interesting as a form of collaborative future making because 3: 1) they combine thinking with making, 2) they are a reciprocal practice, done in dialogue with others, 3) they trouble predefined categories, and instead propose new configurations of humans and non-human actors, 4) they are radically inclusive in including perspectives from all implicated by the practice of worlding, including multispecies perspectives. As feminist activists, researchers, artists, and technologists, we see it as urgent to create new forms of situated, plural and collective forms of design futuring. However, as an emerging method, speculative fabulation is currently under-defined and therefore difficult to apply to design research.

WORKSHOP GOALS

A primary aim for this workshop is to therefore to explore, discuss and formulate best practices, theoretical concepts and implications of fabulation as a collaborative design practice for imagining futures. Of particular interest are a set of questions: what does a design-oriented practice of fabulation look like? What kinds of designerly knowledge can fabulation produce? What methods can be developed for fabulating with stakeholders? Can speculative fabulation be deployed as a strategy to produce “viable” futures? Alongside examples of fabulated futures, the workshop will offer a forum for sharing, comparing, and learning from one another. We seek conversations of how fabulation has been deployed in design futuring and other areas of design, uncovering the possibilities of fabulation as a generative mode of making new connections between actors and technologies, and build a space for reflecting on the futures fabulation produces, developing direct interventions for implementing changes that they inspire.

A secondary aim for this workshop is to invite researchers into hands-on playful explorations of fabulations, through a set of exercises of fabulating futures from across the different Nordic countries. Through a common brief of fabulating futures of the Nordics, we will explore and produce fabulations, and use these quickly iterated and open-ended story-worlds to discuss the potentials and implications of fabulations as a futures-oriented approach in design research.

POSSIBLE TOPICS

Together with participants we hope to drive conversations around topics including (but not limited to):

- *Materializing fabulations* – What forms of materials can fabulations take? What are advantages and disadvantages from various representations and performances for fabulation? What kinds of novel materials and approaches can help produce stronger, more affective or affirmative radical futures?
- *Temporalities for fabulation* – When can using fabulation be a helpful part of a design process? How can different forms of thinking with time be useful for design? How does fabulations relate temporalities of pasts, presents, futures?
- *Cultivating joy, cultivating hope* – How does fabulation navigate utopian and dystopian collective imaginings in its effort of envisioning preferable futures? How can joy and hope be nurtured in imagining futures?
- *Feminist futuring* – How does speculative fabulations’ feminist commitments transfer into design practice? How are power hierarchies and intersectional critique mediated through storytelling and world-building practices?

- *Post-anthropocentric worlding* – How are non-human perspectives included in collaborative design practice? How are future predictions of climate crisis deployed in futures-oriented design practice aiming at informing the present?
- *Audiences* – How can fabulations be performed, interpreted, and used by other disciplines? What political possibilities does fabulations open across audiences and stakeholders? Can fabulations inspire designers, policymakers, technologists, ecologists and so on to imagine and build different societies?

WORKSHOP STRUCTURE

We propose a one-day in-person workshop at Nordes 2023.

SESSION 1: FORUM

In the morning session, we will share and discuss how fabulations have been deployed in design, including design futuring and other areas. With the help of short presentations, debate, and concept mapping, this activity aims to provide grounding for future work done in this area. Through sharing and presenting case studies and examples of existing digital technologies, in addition to analysing and reflecting on those, this workshop will set the scene for “the present”, creating a base for start imagining possible futures.

SESSION 2: FABULATION

In the afternoon, we will create fabulations that envision new futures for design in the Nordics. We will use hands-on explorations, such as collage-making, bodystorming, low-fidelity prototyping and storytelling techniques, to develop fabulations in smaller groups. We will share these examples of fabulations and use them to discuss our mappings from the morning session.

ANTICIPATED OUTCOMES

By bringing researchers of varying levels of experience together we hope to do three things. First, there is an opportunity to build and strengthen an international community of research practitioners invested in alternative future-creation, and developing stronger networks among them is a top-level outcome of this workshop. Second, this group can use the workshop as an opportunity to reflect on how design can work to engage with the future in new ways—from conversations here, we hope to learn more about what works and what doesn’t work when fabulating futures. Third and finally, this conversation about practice can ideally lead to new forms of theoretical knowledge about the capacities for design to engage in new kinds of future-making.

We will aim to visually document the materials and discussion that emerge in the workshop and disseminate them via the workshop website. At the conclusion of the workshop, we will explore the possibility of organizing a special issue for a journal. Beyond that, though, we intend to also explore other, more non-traditional



publication venues to disseminate broader accounts of fabulation and futures in design.

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(RE)NARRATING THE HOLOBIONT THROUGH DESIGN

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ABSTRACT

As part of design's transformation towards sustainable practices, growing interest has been directed towards the inclusion of more-than-human perspectives. This workshop seeks to engage questions of giving voice to our microbiomes—the plethora of critters who co-constitute us as embodied and social beings but are most often invisible in both human experience and design practices. The aim is to experiment with collective and experiential ways of making tangibly present the microorganisms that live around on and within us and make us hosts of living assemblages, or what biologists refer to as holobionts. Beginning from past individual experiences, workshop participants are invited to collectively materialise, narrate, and perform more-than-human knowledge in the present. From these perspectives, we engage microbial-human interdependence, making it conceptually and methodically relatable by means of experimental design inquiry before re-narrating the collective experiences as microbial design futures.

INTRODUCTION

Following the resounding call for a radical transformation of design in light of the omnipresent environmental crisis, growing interest among designers and design researchers has been levelled at decentring the human (Wakkery 2021, Folano 2016), informed by

“a more-than-human intellectual zeitgeist catalysed by the Anthropocene” (Lorimer 2020, 4). For the most part, these interests seem to have been directed either outwards, toward the world as a multispecies pluriverse (Escobar 2018), or inwards towards microbial life as decontextualised biodesign experiments in laboratory settings (Kim et al., 2022). Increasingly, we find experimental exceptions to this binary positioning. For example, in the work of Helms et al., (2021), Liu et al. (2018), and our own work in probiotic participation (Lenskjold & Wilde 2022). Yet despite these concerted forays, the space of human-microbiome interplay remains largely blank in the design imaginary.

To open conceptual space and encourage further design experimentation into human-microbial relations, we propose a collective inquiry into the space itself. To that end, this workshop begins from the biological conception of man as holobiont, in which holobiont is understood as: “the assemblage of a host species and the many other species living in or around it, which together form a discrete ecological unit through symbiosis” (Margulis and Fester 1991).

We posit the idea that if design and designers are to move beyond the historically limited vision of the human as a singular being, it will require a methodological development such that the ways that we engage more-than-humans embrace the idea of humans as multi-species assemblages; as ecosystems within ecosystems; as holobiotic events.

To advance this argument, we propose a collective inquiry that reimagines a range of experimental research methods, to see if they might assist us in grappling with the blank space of our microbiome, the void of our understanding of ourselves as holobionts.

Building on our earlier experiments of (re)narrating probiotic participation through design (Lenskjold & Wilde 2022), and because more-than-human perspectives remain relatively new to design, and methods for grappling with the more-than-human are in their infancy, our workshop aims to reflect on researcher intentions, enactments, and the ways that the methods may or may not evoke (let alone engage) a



multiplicity of species and perspectives. Critically, our approach will allow us to speculate – through the ongoingness of the broader inquiry that the workshop sits within and our attempts to take this work to new publics and locations – on the affordances of methodological reimaginings for radical experimentation. Furthermore, grounding this inquiry in the context of experimental design research connects it to a methodological unfolding of the workshop as a critical method for moving away from human exceptionalism. We thus consider the workshop as methodology to be an apt site for advancing this inquiry.

The workshop itself is an expository process that follows a preparatory cultivation of narration prior to the conference workshop, followed by material experimentation and re-narrations during the in situ workshop, and an optional reflexive recasting, post conference, to further cultivate what was uncovered. In the following sections, we describe how we work with methods before, during and after the workshop, to facilitate the intended inquiry.

UNFOLDING MICROBIAL EXPERIENCE

The workshop embodies a 3-tier approach: First, we work through ways of making the sensorial and conceptual ‘blank’ space inhabited by the infinitely small present, by taking inspiration from methods such as ‘life writing’ and object theatre. Second, we engage our gut and skin microbiome through probiotic experimentation with foodstuff and through collaborative skin cartographies. Third, we apply these experiences to speculative (re)narrations of human-microbial relations through means of design futuring, aided by the notion of threshold concepts for breaching the socially constituted separation between humans and the space inhabited by microbial lives. We anticipate these shifts will assist us in destabilising our assumptions around the invisible ‘other’ that is in fact us, and might result in new perspectives and positionings from which to conduct design as holobionts.

CULTIVATION I (PRE-WORKSHOP PREPARATION)

To seed the workshop, we ask participants to apply with a short but rich vignette that they develop using the autoethnographic method of life writing, which uses the self as the site of inquiry as a route to ecological understanding, to uncover new insights about the interrelationships between personal experience and place (Fletcher 2023, inspired by Hasebe-Ludt 2009). We are interested in experiences or knowledge propositions that involve the prospective workshop participants and their microbiomes in relation and invite them as ‘designer- life-writers’ to activate their

narratives using text, collage, illustration or other means.

Once participants have been accepted, we invite them to select and bring an object that can serve as a boundary object (Star 1989), or ‘thing-to-think-with’ (Brandt 2006) to guide them in (re)narrating their vignettes in the workshop. We also ask them to disrupt common hygiene practices by leaving a small but accessible patch of skin (e.g., on the upper forearm) unwashed for at least three days before the workshop, to both literally and metaphorically cultivate the growth of their skin microbiome in this part of their body. Our skin microbiome is a kind of blank space; invisible except through representations shown in medical, hygiene and beauty contexts. By cultivating a small section of our skin microbiome, we hope to ‘bring it alive’ so it might flourish in our imaginations as well as on our skin.

WORKSHOP PART 1: (RE)NARRATION

For the (re)narration, participants use their boundary objects to open a reflective space around their vignettes. We activate this process using the Object Theatre method to bring the (re)narrations into a collectively negotiated, embodied space. This method repositions the object as relational by using it to literally animate an unfolding story (Ryöppy et al. 2018). This method acknowledges the process of co-inquiry, where researcher(s) and participants draw on their past experiences of life projected into the future (Brinkmann 2014). As Ryöppy et al. (2018) explain, in this method, the objects are thought of as ‘relational entities’ or ‘social objects’ that can only be experienced through the enactment of particular social acts (Mead 1934, Stacey 2007). In our case the social act is the human-microbiome encounter of the vignette. We bend this method from its original use, to turn it into a form of collective, embodied inquiry, oscillating between the role of researcher-narrators and the role of researcher-workshop-participants, who will themselves become researcher-narrators. We thus blur boundaries between researcher and participant to foster development of an emergent collective narrative.

WORKSHOP PART 2: MATERIAL EXPERIMENTATION

Part 2 of the workshop steps away from literal narrative-building to engage experimentally with the microbiome. This step builds on previous experiments with edible probiotic speculation (Lenskjold & Wilde 2022) to radically disrupt norms around engagements with the microbiome. Using a tasteless edible (vegan) casting preparation, participants work in pairs or small groups to make a paste of agar agar and water, lay a thin layer of this paste on their unwashed section of skin then wait for it to dry. Once dry, we invite them to peel it away and thus harvest a microscopic—but, we hope,

flourishing – section of their skin with microbiome. The process will thus capture an invisible element of our holobiotic-self and separate it for inspection and reflection as epidermis (the outer layers of skin) cartographies.

To trouble the process of imagining ourselves as an assembly of the visible and invisible, we will have microscopes available in case participants would like to see what the agar agar paste harvests. They thus have the possibility to bring this blank space in their imaginaries into something more tangible and thus conceivable. This second step will not be required. We recognise the power of the blank space and invite participants to think carefully about whether they breach it.

WORKSHOP PART 3: SPECULATIVE CO-NARRATIONS OF HUMAN-MICROBIAL FUTURES

We begin part 3 by introducing the notion of *threshold concepts* (Barrett et al. 2017) and ask workshop participants, in groups of 2-3, to apply this notion to their experiences gained from the part 2 material experiment in order to collectively narrate and materialise human- microbial design futures. In Barrett et al., threshold concepts seek to “identify (...) transformative sustainability learning which engages the more-than- human as active communicating agent rather than simple object to be studied” (p. 132). In the same vein, we ask participants to first identify possible means of active human-microbial communication and, second, to co- narrate future applications of such communication to the context of design speculation. In a refractive mirroring of part 1, participants are encouraged to negotiate, refract and fuse elements of their experiences into a collaboratively written vignette that depicts a future scenario or situation involving the microbiome in design. In the final part of the workshop, participant groups will materialise their written scenarios as conceptual, paper prototypes, akin to what Sorensen et al. (2022) call speculative *theory instruments* – material instantiations of epistemic modes of knowing (in this case narrations), helping to mediate between the abstract and the tacit. Together with the vignettes, the prototypes will serve as collaboratively produced and palpable outcomes of the workshop, as well, we hope, as a kind of opening.

CULTIVATION II (POST WORKSHOP REFLECTIVE RECASTING)

In a challenge to the boundaries set by the conference workshop, once participants return home—perhaps to the site of the original cultivation exercises—we invite them to develop a new vignette that might seed a renewal of the process. We neither require nor guide them in this new process. Rather, we are interested to discover if the vignettes diverge in any way from the

original ones offered before the collective, experimental dive into human as holobiont. Following, we will collectively explore publishing opportunities with the participants of the workshop contributions and outcomes.

DISCUSSION & CONCLUSION

The concept of holobiont is rooted in the biological idea of holism, stating that biological entities should be viewed in their entirety, as emergent systems with properties and behavioural capacities that exceed those of the sum of its parts. The translation of our understanding of the microbiome from biology to design is in no small part informed by recent interests in the microbial imprint on our lives in the social sciences. Anthropologist Stefan Helmreich asserts that the mere biological fact that “we humans are sideways mash – ups Franksteins – made up of a welter of teeny microbial friends and enemies” (2014, 53) also has political consequences. He argues for a shift towards “*symbiopolitics*” (p. 56, emphasis in original), which insists on the entangled existence and mutual dependence of many life forms at different scales. In design, such political consequences, we argue, should call us to question and explore *with whom and for whom* we design anew. Finally, as a site for collective speculation and reflection in action, we hope that the workshop will foster inspiring ways of breaching the black box that surrounds human-microbiome interactions, and thus elicit practical engagements with questions pertaining to the status of symbiopolitics in design.

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EARTH LOGIC LOCAL GOVERNANCE LINKÖPING

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ABSTRACT

Urgent and intertwined social, cultural, economic and ecological challenges require design to move beyond the frameworks – such as the economic growth logic – which have spawned the problems. The Earth Logic plan (Fletcher and Tham, 2019) framed three possible action areas which can liberate design from both the focus on growth and focus on the tangible object. The action area of *governance* – directed to regulation, organisation, negotiation – allows design to engage concretely with complex relationships and entanglements. Drawing on feminist technoscientific notions of care (Puig delà Bellacasa, 2017) we position governance as a regulatory activity available to everyone specific, in a situated everywhere. In a pilot study, we have explored the potential of this almost ‘blank space’ by prototyping a local fashion government in the Northwest of England. Drawing on the concepts, methods and tools we have developed, the workshop invites participants to form a temporary government specific to the site of Linköping and the conference.

INTRODUCTION

This workshop engages with the theme of the Nordes 2023 conference theme ‘a blank space’ by inviting participants from all areas of design into the

underexplored remit of *governance* as a driver for situated and systemic change. The context of our invitation is our climate emergency and our intertwined social injustice emergency. We offer this invitation as two seasoned design researchers straddling academia and activism, operating from within a Western context, specifically universities in Scandinavia and the United Kingdom, and as part of a global learning network. Throughout this proposal we use the terms ‘we’ and ‘our’ to declare responsibility in the context of urgent challenges. This is an aspect of the rooted and situated governance that starts from the individual, to progress to the community and to society, and back again.

The Earth Logic action research plan was designed as a radical invitation to all fashion stakeholders to let the health and survival of the Earth and all its species, including humans guide all activity instead of the dominant economic growth logic. (Fletcher and Tham, 2019) The plan proposed three goal areas LESS – fitting all activity within Earth’s limits; LOCAL – rooting all activity in place and community; PLURAL – inclusion and diversity. It proposed three action areas - types of design activity - to encourage this systemic and paradigmatic change: Learning, Linguaging (after Maturana and Varela, 1987) and Governance.

GOVERNANCE

Governance, the focus of this workshop, is often associated with top-down decision making, with nation states, or institutions like the EU or the UN, typically with high level decisions made at great distance from everyday lives. Here we position governance as a multidisciplinary and multisectorial design activity, in dialogue with, for example, political theory, citizenship and democracy studies. Instead of formal and top-down approaches, we frame governance as a regulatory activity which takes place across and within all systems, including individuals and, critically, that governance is always relational. Rather than it being something that only governments do, we see that, as people, we already govern our lives on a daily basis. For instance, we are constantly regulating our body’s temperature, adding or



peeling off layers of clothing as we need to. We also regulate what and how much we eat, organising and making choices about our diets typically around three times a day. Importantly, we often know when we've had enough food or taken up enough space in a conversation – although we might choose to override this knowledge.

Scholars from a range of fields have contributed to relational understandings of governance. Ostrom's work (e.g. 1999) showed that less authoritarian systems mobilising nested tiers of governance from the local level to the connected system as a whole can achieve a greater flexibility and nimbleness in responses to crises, better represent their communities, and that commons can be fairly regulated at the local level. Resilience theory proposes that diversity, modularity and overlapping functions that characterise thriving ecosystems can also create conditions for human made systems to be resilient. (Walker and Salt, 2006) Peace and reconciliation studies have emphasised the role of middle range leaders; their connections to both top and grass roots enabling them to transcend polarisations and 'issues politics' (Lederach, 1997). Scholarship in feminist and community economies has diversified understanding of economics, and exploring economic models beyond capitalism. (Gibson-Graham, 1996) In contrast to Western welfare concepts focused on the individual as subject, the South American philosophy of Buen Vivir refers to the health and quality of social and ecological relationships in the specific context (Gudynas, 2015). Governance instruments reflecting a turn to more relational approaches include: the National Happiness Index as adopted by Bhutan, European Commission's initiative the Growth Country Index, which takes into account consumption, life expectancy, leisure, inequality and unemployment (EC, 2019).

GOVERNANCE AS DESIGN

The case of fashion illustrates the limits of formal, top down governance as decades of both legislative initiatives and industry driven standards have failed to deliver net environmental and social improvement (Kuruvilla, 2021; Sharpe et al, 2022). Earth Logic's decentralised understanding of governance complements the process of regulation from formally appointed governance bodies. It draws attention to how processes of organisation and regulations can, themselves, be drivers for societal transformation. In some remits, such as fashion, it could be argued that provision is no longer a production issue, but 'simply' an organisation issue as the global stock of clothing is sufficient if distributed adequately. In the remit of food, one third is wasted at the user end, which calls for new governance at the level of the household. Jeswani et al, 2021).

This recognises that how we govern is something that can be reimagined and enacted including by those who are not part of formal government. The Earth Logic framework positions governance as care - intimate, healing of relationships from within. Critically, care is something that everybody can do, and which is situated. We draw here on the work of Puig de la Bellacasa (2017) and Fisher and Tronto (1993).

Conventional governance approaches rely heavily on indicators directed to external frameworks (such as GDP or the Sustainable Development Goals) to measure the impact of decisions. Yet, indicators not only track but also frame what a society or organisation does, arguable setting boundaries around its ambitions. In 2022, the Higg Materials Sustainability Index (MSI), in use by global fashion brands, was suspended, after criticism of contributing to greenwashing by the Norwegian Consumer Authority (NCA). (Britten, 2022)

The Earth Logic governance work therefore prioritises the evolution of new indicators for design that authentically indicate the health of relationships and that are meaningful at the level of the individual, the community and society. For example, the Earth Logic goals area of LESS could be indicated at the individual level as borrowing more from the library than purchasing books, LOCAL could be indicated by knowing more people in the neighbourhood, and being able to name more local species. This work draws on, for example, Sustainable Seattle. (Seattle, 2003) The Earth Logic framework asks how governance can advocate for silent and invisible stakeholders. It also considers how plural types of design knowledge can be factored in, making space for understanding that comes from outside of economic growth logic.

INSIGHTS FROM GOVERNANCE PILOT

The Earth Logic Local Governance Linköping workshop builds on pilot work already conducted in the UK, as well as ongoing Earth Logic research into governance as a design tool for intertwined social, cultural, economic and ecological change. The project Earth Logic North West Local Fashion Government explores the potential of setting up issues based very local government. The site is chosen because of its history of woollen textiles manufacture, as well as recent new textiles and clothing development. A daylong physical workshop in October 2021 prototyped tools for enacting a local fashion government and started sketching principles for it. The workshop gathered stakeholders from industry, governance, NGOs, activism, research and education, and media, and also presented the perspectives of key species related to textiles, such as sheep and flax. The work has progressed in online workshops. During 2021 and 2022, we have also conducted dialogue with a Brussel based

policy lobbying organisation, and a broad range of global fashion stakeholders, which has complemented and sharpened our outlook on local government. Finally, during Stockholm +50 Global conference in June 2022, we led a day-long event focused on the trajectory of governance from ME- the individual, to WE - the collaborative unit, to WORLD - society and Earth systems, and BACK AGAIN - the learning we bring back. This trajectory has been developed, in the context of metadesign, to support uncompromisingly systemic and holistic approaches to complex urgent challenges. (Tham, 2022; Jones and Lundebye, 2012)

Initial findings of this work include that:

- The notion of governance as design activity, and generally as driver of change beyond the formal level is unrehearsed. It also raises curiosity.
- Engagement with the notion of very local governance in itself can increase the experience of agency as it supports a shift from commodified options to self-leadership.
- Engagement with governance at the level of Me is a condition for governance at We and World.
- The governance approach can facilitate a very rapid shift of engagement from single focus on materials and processes (product level), to complex entanglements of economic systems, norms, mental health.
- The governance work can reveal how difficult painful histories of place and community – such as poverty and class struggles, shape what seems imaginable today.
- The development of meaningful and authentic indicators as part of governance work is helpful and crucial.
- The governance provocation supported participants to see the value of connecting with a wide range of stakeholders.

NEXT PHASE OF WORK

This work continues during 2023, and will include explorations into how explicitly values led communities (such as engaged Buddhists) understand and practice governance; governance across species (such as horses and humans). The work will result in a process and tools for setting up local issues based governance, as well as a support and learning network.

NORDES GOVERNANCE WORKSHOP

The purpose of the workshop is to invite our research community, creative and critical peers into this almost blank space that is governance as design, and continue populating it. We will form a temporary local and issue

based government. The matter of care (Puig dela Bellacasa, 2017) that will provide focus to this local governance is access to clothing and fashion. This will be framed in such a way that participants do not require a fashion background, and can take it back to various disciplinary and issues contexts. We welcome participants from all design disciplines. We will locate the exploration to Linköping and the area immediately around the conference specifically, although again, the exploration will be framed so that it is translatable to other places and communities. The workshop will unfold in four phases in the trajectory from ME, WE, WORLD, BACK AGAIN.

In the workshop, we will use a range of approaches developed for uncompromisingly systemic and holistic engagement and to invite many ways of knowing – an extended epistemology (Heron and Reason, 2001). This will include short meditations, creative writing and storytelling, simple materialisations in textiles and paper, roleplay.

Because of the shortness of time, the workshop will represent a *partial and incomplete* engagement with Linköping as well as the issues at hand. We will reflect on how we can acknowledge and work from a position of limited knowledge and time with integrity.

Participants will leave with:

- Insight into the Earth Logic framework for governance.
- Concepts, methods and processes to take to their home environments, in education, research and local community.
- Invitation for ongoing exchange around the emergent opportunity of design as governance.

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WORKSHOP DESCRIPTION:

SHAME CUES

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ABSTRACT

This workshop offers a playful learning experience where participants are introduced to various ways of thinking about shame and learn to understand how this emotion takes shape through social concepts such as guilty pleasures, euphemism, vicarious embarrassment, forbidden fruits, stylizing, satire, stigma, and taboos. The workshop aims to test and discuss the usefulness of a prototyped design tool named *Shame Cues*, specifically focusing on its applicability for the problem framing stage of a design process. *Shame Cues* is a card deck comprising 64 cards and describes a broad range of phenomena and manifestations of shame as observed through culture, social interactions, and physical objects. The card deck is a result of an ongoing research project and is made to give designers a hands-on tool to discuss, critically reflect upon, and play with social concepts where shame and other self-conscious emotions play (or could play) a central role.

INTRODUCTION

Did you know there are 5000 euphemisms or slang terms for menstruation? That toilet paper was first made with hemp and sold to fight off hemorrhoids. Or that the deodorant industry has grown to an astonishing \$18 billion in just 100 years? Have you ever wondered why putting your elbows on the table is impolite? Why we

use cutlery instead of our hands to eat? Or why we desire to smell like notes of jasmine, saffron, and cedar?

These and other curiosities serve as a starting point for this one-day workshop exploring how stories about shame intertwine with everyday products and behaviors. During this workshop, participants will become familiar with self-conscious emotions such as shame, guilt, and embarrassment, how they are embedded in our culture, and participate in our social life. The workshop aims to investigate how these emotions present positive and negative experiences and take shape through social concepts such as guilty pleasures, cringe, morbid curiosity, and satire, ultimately narrating stories about right and wrong, good and bad, and possible and impossible.

DESIGN AND SHAME

Shame is a familiar, as well as a complex emotion. While shame can be experienced as a social threat and painful momentarily, it can also be a motivational force for prosocial behaviour (Scheff, 2003). Shame is a self-conscious emotion that depends on social conditioning and tells us something about right and wrong (Tangney et al., 2006). It can act as a social control mechanism and a behavioural agent with positive and negative effects (Trondsen and Boks, 2022). When designing products and services, emphasizing shame in subtle or explicit ways can affect how we act and feel about certain topics. Such design interventions can play a role in many contexts, supporting healthy practices, counteracting unsustainable behaviors, or criticizing social injustice. In some cases, shame can nudge us into more socially healthy behaviours (e.g., avoiding littering in public), while in other cases, it can act as a threshold to doing things differently (e.g., wearing unconventional clothes).

Considering the social and moral capacity of shame, it becomes interesting to understand how this emotion acts out in society, as well as through design. As opposed to more pleasurable emotions, such as happiness, desire, and joy, shame has not received much attention in



design. As suggested in the below quote by Aldous Huxley, it is perhaps not the presence of shame but our reluctance to deal with shame that empowers the storyline behind it. Thus, one could also critically question the narrative effects of shame. What stories does it tell? What boundaries does it draw? What limitation does it pose? What opportunities go overlooked? And what challenges become disguised?

Great is truth, but still greater...is silence about truth. ...simply not mentioning certain subjects... influences opinion much more effectively than ...the most eloquent denunciations.

SHAME CUES

Shame Cues is a tool prototyped in an ongoing doctoral project investigating the role of shame in design (Trondsen and Boks, 2022) and the application of shame concepts into design practice. The tool has been developed based on theoretical frameworks and practical experience, including literature reviews, cultural observations, discourse analysis, case studies, and master projects in design (Boks and Trondsen, 2022). The prototyped tool results from many approaches to instrumentalizing this knowledge and supporting designers with a vocabulary, a praxeology, and a tool to work more efficiently with the positive and negative effects of shame. Furthermore, *Shame Cues* attempts to utilise discourse analysis, phenomenology, and semiosis as modes of interpretation to show how feelings such as shame envelop a social practice and in manifestations beyond bodily expression. Thus, the tool's inquiry explores the role of shame as given implicitly, through cultural manifestations, and in a practical sense.

Shame Cues is a card deck of 64 cards (see Figure 1) describing socio-cultural concepts that relate to shame (e.g., guilty pleasures, euphemism, forbidden fruits, stylizing, public humiliation, shamelessness, mockery, taboos, stigmatizing, metaphors, satire, shunning, closeting, guilt-tripping, and second-hand embarrassment) and divided into 16 categories (humiliation, guilt, embarrassment, moralizing, dark attraction, exaggeration, vulgarity, separation, awkwardness, pleasure, secrecy, counteraction, softening, humour covering and slang). The card deck is made to help designers understand, reflect upon, and explore concepts where shame (and other self-conscious emotions) plays a central role. Each card should be open for both cultural and personal interpretation. In this way, the individual cards can be used to understand different concepts better, facilitate group discussions, critically question the status quo, and spur creativity beyond the limitations of shame.



Figure 1: Example of three *Shame Cues* cards (Civil Disobedience, Sarcasm, and Dark Humor)

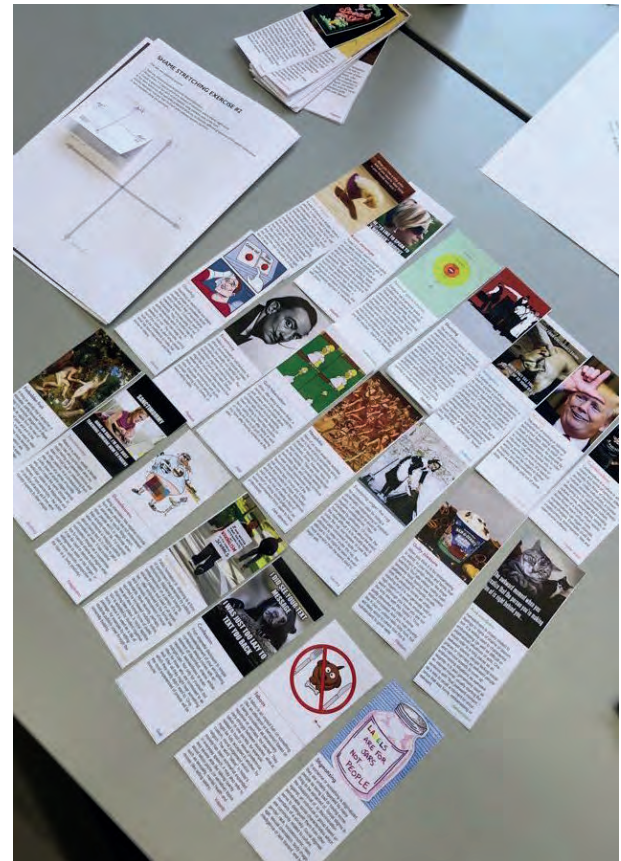


Figure 2: *Shame Cues* used in a workshop during Xplore Design Week 2022 in Antwerp.

SHAME CUES WORKSHOP

Although still a prototype, the card deck has been tested and iterated through five workshops (see Figure 2) and planned for one more before the end of May 2023 (see

Table 1). Similar to a previous two-day workshop focusing on intimate hygiene products (Trondsen et.al., 2023), this specific workshop will focus on mundane everyday products. The participants will work together in groups and use *Shame Cues* as a source of inspiration to explore a design challenge through concepts of shame and critical perspectives. Guided by specific exercises, the workshop aims to frame design problems and develop concepts that can challenge the status quo and engage with a moral storyline through a reflexive, critical, and fun design process. More specifically, the *Shame Cues* will support the participants in exploring how designers can critically engage with social narratives to uncover blind spots, hidden thresholds, and missed opportunities. An equally important goal is to collectively explore the usefulness of having such a tool compared to more traditional approaches and evaluate whether addressing aspects of shame in a design process can help to evolve criticality, spur inspiration, and extend the solution space.

Table 1: Shame Cues: Workshop schedule

Date	Organiser	Workshop
Feb. 2022	University of Antwerp - Xplore Design week 2022	5-day workshop with 16 design students
June 2022	Joint PhD Project / Workshop 2022 (Trondheim)	2-day workshop with eighth researchers/ students
Feb. 2023	Design Department NTNU Trondheim / Sustainability transformation course	3 hours workshop with 20 design students
Feb. 2023	University of Antwerp - Xplore Design week 2023	5-day workshop with 16 design students
April 2023	Cumulus 2023, Antwerp	2 hours workshop with six conference participants
May 2023	Design Department NTNU Trondheim / Sustainable design course	4 hours workshop with ca. 50 design / engineering students
June 2023	NORDES 2023, Linköping	1 day workshop (TBD)
Sep. 2023	E&PDE 2023, Barcelona	3 hours workshop (TBD)

EXPECTED OUTCOME

A shared experience of exploring, testing, discussing and evaluating the usefulness of *Shame Cues* as a potential design tool that can be included to inform the design process, and specifically in comparison with what new ideas or perspectives occur when shame is factored into the design process. The workshop is expected to produce outcomes reflecting the tool's usefulness and inspire participants to push boundaries, ask questions, and seek new perspectives by uncovering and disclosing the many blindspots disguised by shame.

PARTICIPANT TAKEAWAYS

A hands-on opportunity to interact with and test *Shame Cues*. Through various exercises, the participant will be given a safe and playful environment to learn more about shame and its social mechanisms and seek inspiration for how such perspectives can be included to benefit the design process. Ultimately the participants will play an important role in evaluating the usefulness of having such a tool for the specific design challenge in collaboration with others, as well as its relevance to their own design research and/or practice.

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ABOUT Linköping University

Linköping University, LiU, was founded in 1975 as Sweden's sixth university, and is one of Sweden's largest universities with over 37 000 students and 4 300 employees, of which 1 200 are PhD students. LiU has four campuses, two in Linköping, one in Norrköping, and one in Stockholm. Linköping is known for its thematic and multi-disciplinary research and boundary-breaking education.

LiU currently runs comprehensive design programs on bachelor's as well as master's level. LiU is also one of the few universities in Sweden that has the privilege to run a doctoral program in design. The university's commitment to design education extends beyond departmental boundaries, enriching students' experiences across the Faculty of Arts and Sciences, the Faculty of Science and Engineering, and the Faculty of Educational Sciences.

Our MSc in Design, a two-year program, is designed to cultivate versatile designers capable of addressing societal challenges. Specialized tracks in Service Design, Visual Media Design, and Sustainable Design offer a holistic approach to design education.

In Stockholm at the Lidingö campus three programs are run by Malmstens, focusing on furniture, Design, Upholstery and Joinery, while the Norrköping campus hosts the bachelor's program in Graphic Design and Communication.

LiU also has a long tradition in educating engineers in different aspects of design, from industrial design and UX design to service design and design management. LiU is also running a full engineering degree program focusing on Design and Product Development.

LiU's design research is multifaceted and transcending departments, campuses, and faculties. The university's design research spectrum spans from artistic and design-driven endeavors to foundational and applied design research, reflecting a commitment to continue to develop design as a knowledge area in its own right as well as developing design practices.



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