

THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Design Sensibilities

Corporeal Theories as Embodied Epistemology for Design Research

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CHALMERS UNIVERSITY OF TECHNOLOGY | UNIVERSITY OF GOTHENBURG
Gothenburg, Sweden, 2026

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ISBN 978-91-8103-465-3

Doktorsavhandlingar vid Chalmers tekniska högskola, Ny serie nr 5922.

ISSN 0346-718X

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Printed by Chalmers Digitaltryck,
Gothenburg, Sweden 2026.

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Abstract

Starting with a seemingly bounded design brief—studying and designing social drones—this thesis gradually opens into an inquiry into how design knowledge forms those who practice it. Rather than treating design as a neutral means of intervention, the work attends to design sensibilities: the embodied, relational orientations through which designers come to perceive, act, and live in the world. These sensibilities operate as corporeal theories; becoming a skin that accumulates, hardens, softens, and is shed over time.

Theory is often treated as something we apply to practice, or extract from it after the fact. Here, there is a different premise: that theory within design is already being made in the fostering of sensibilities. I argue that attending to and articulating sensibilities as a form of intermediate-level knowledge allows us to understand it not only as abstraction, but as something that transforms bodies, relationships, and ways of being in practice.

Through first-person methods, longitudinal autoethnography, and material making, the work traces a shift from naïve engagement to critical disillusionment, and onward to a reconfiguration of what it might mean to practice and theorise design *otherwise*. As the research moves with its time—through intensifying technological concentration exemplified by the case of drones—it bears witness to where imagination feels institutionally and intentionally foreclosed. Rather than smoothing over these ruptures, the thesis centres them as sites where design theory is remade through corporeality rather than represented as a lens.

The dissertation is a non-linear constellation of collaborative experiments, including pictorials, critiques, and co-authored texts and designs structured in three chapters. The first focuses on refusing the inevitability of drones, the second describes design epistemology as sensibilities, and the third opens paths forward for design as an implication from a turn to sensibilities. This compositional choice resists the primacy of individual authorship and challenges academic norms that locate rigour in separation between theory and practice, researcher and subject, or singular voice and collective inquiry. I discuss co-constructed relational knowing not only through artefacts or arguments and shared attentiveness through reflexive and diffractive thinking and making.

At its core, this thesis argues for an expanded understanding of designerly knowledge: one that takes seriously how design epistemologies act upon designers themselves. It joins conversations on design *otherwise* and on making trouble, proposing that withdrawal, instigation, refusal, and pauses in making are not endpoints but part of a broader repertoire of design actions in grave need of a collective stance. Design practice unfolds alongside social, political, and ecological rupture, coming to terms with its impossibility under the violence of capitalism. By articulating sensibilities as both knowledge outcome and method, the thesis invites a rethinking of design research as a practice of becoming: with others, attuned to the collective sensibilities required to navigate worlds that are increasingly difficult to design within. It culminates in a call for design as a pre-revolutionary act.

Keywords

design epistemology, first-person methods, sensibilities

List of Publications

Appended publications

This thesis is based on the following publications:

Chapter 2: Refusing the Inevitability of Drones

- [I] **M. Gamboa**, *Living with Drones, Robots, and Young Children: Informing Research through Design with Autoethnography*
NordiCHI'22: Proceedings of the 2022 Nordic Human-Computer Interaction Conference, October 2022.
<https://doi.org/10.1145/3546155.3546658>
- [II] **M. Gamboa**, M. Sturdee, S. Ljungblad, *Conversational Composites: Conversational Composites: A Method for Tangible Illustration Layering*
TEI'23, February 2023.
<https://doi.org/10.1145/3569009.3572793>
- [III] **M. Gamboa**, S. Thunberg, S. Börjesson, M. Sturdee, S.Ljungblad, *Drones in the Archipelago: Tensions in Technological Progress for Medical Transportation*
ACM Transactions on Computing for Healthcare.
<https://doi.org/10.1145/3818613>
- [IV] **M. Gamboa**, *Robots are Increasingly: Imagination Crisis in Human-Computer Interaction Research*
6th Aarhus Decennial, 18th-22nd August 2025.
<https://doi.org/10.1145/3744169.374418>

Chapter 3: Design Sensibilities

- [V] **M. Gamboa**, *My Body, My Baby, and Everything Else: An Autoethnographic Illustrated Portfolio of Intra-Actions in Pregnancy and Childbirth*
TEI'23: Proceedings of the Seventeenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI'23), February 26-March 1, 2023.
<https://doi.org/10.1145/3569009.3572797>
- [VI] **M. Gamboa**, S. Hendriks, *In Praise of Shadows: Sensibility and Somaesthetic Appreciation for Shadows in Interaction Design*
DIS'24: Proceedings of the 2024 ACM Designing Interactive Systems Conference, July 2024.
<https://doi.org/10.1145/3643834.3660679>

- [VII] **M. Gamboa**, K. Andersen, *Sensibilities as Knowledge in Design Research*
DIS'26: Proceedings of the 2026 ACM Designing Interactive Systems Conference, June 2026.
<https://doi.org/10.1145/3800645.3813069>

Chapter 4: Design Pending Revolution

This Chapter includes work outside of academic publications that has been fundamental to my PhD journey, giving them equal importance to the appended publications

Research Contribution

In this section, I describe my contributions to the appended papers.

Paper I is an single-authored autoethnography, although written with the invaluable contribution of my family. In retrospect, my children should have been co-authors. The idea of autoethnography as a method was already suggested in our funding, and became particularly helpful in the context of the COVID-19 pandemic. I followed the suggestion with the full support of my main supervisor Sara Ljungblad, who reviewed the paper multiple times. I wrote and envisioned the whole paper from there on, including conceptualisation, combination of methodological framing, documentation, data analysis, and writing.

Paper II, is a paper in pictorial format. It was led and conceptualised by me. It is the result of an exercise conducted together with the second author. I imagined the method and implemented it with the second author, who contributed with her reflections and illustrations. To conduct the method, we gathered data through a short online survey developed with the second author. Along with the third author, I formulated the conclusions and instructions for appropriation of the method. I designed all the method illustrations.

Paper III, is the result of a long ethnographic work on the application of drones as a technological tool for medical transportation in the Gothenburg archipelago. The contact with the involved participants and studied case was established by the last author, who also conducted the majority of the ethnography. I participated in the ethnographic studies and structured the paper, leading the second data analysis. The writing of the paper was done in tight collaboration with the second author, with whom I jointly decided the theoretical framing.

Paper IV, is a critique written as a tongue-in-cheek approach to the field. It is a single authored article, conceptualised and written by me.

Paper V, is an autoethnography in pictorial format. In this work, I documented my pregnancy with my third child and used a theoretical lenses to analyse the results. I conceptualised and wrote the paper as a single author.

Paper VI, is a paper describing a shared sensibility based on the reading of an architectural theory book, transferred into notions for interaction design and a prototype. I conceptualised the paper and suggested the method. Both authors wrote the paper and did the design work together.

Paper VII, is an extension of the previous paper on sensibilities related to architecture, this time more closely related to philosophical and theoretical framings in tandem with previous design work. It was first written as a single author paper, but later re-written with Kristina Andersen. I conceptualised the paper, suggested the method and set of theoretical frames, and wrote a first draft. The second author contributed equally in re-writing and re-structuring the paper with incorporation of their own perspectives.

Other publications

- [a] **M. Gamboa**, E Vasconcelos, *Agreements for collective real-time sketching practice in design research*
DRS Design Research Society Conference, 2026.
<https://doi.org/10.21606/drs.2026.787>
- [b] M. Heron, K. Aune, **M. Gamboa**, S. Thunberg, N. Hashmati, P.Belford, *The Hauntology of Generative AI in Design*
DRS Design Research Society Conference, 2026.
<https://doi.org/10.21606/drs.2026.786>
- [c] S. Thunberg, **M. Gamboa**, I. Torre, B. Penzenstadler, *Post-growth Perspectives in HRI*
HRI '26: Proceedings of the 21st ACM/IEEE International Conference on Human-Robot Interaction.
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DIS '25: Companion Proceedings of the 2025 Conference on Designing Interactive Systems.
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- [e] N. Campo Woytuk, **M. Gamboa**, A. Gómez Ortega, J.Y. Park, A. Tuli, D. Tobin, F. Bell, M. Ciolfi Felice, M. Balaam, *Making Intimate Technologies Together*
DIS '25: Proceedings of the 2025 Conference on Designing Interactive Systems.
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Technologies

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<https://doi.org/10.1145/3677045.3685497>

- [k] D. Hagberg, N. Saoulidis, **M. Gamboa**, S. Hendriks, *Prototyping Playful Touch with a Sound-Mediating Table*
DIS '24 Companion: Companion Publication of the 2024 ACM Designing Interactive Systems Conference.
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<https://doi.org/10.1145/3643834.3660698>
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<https://doi.org/10.1145/3411764.3445052>

Acknowledgment

I decided not to condense all the labour of others embodied in me into a single place. I am an interdependent being, profoundly shaped by the love, conflict, pain, and joy I have shared with countless others throughout my PhD journey. Rather than confining these acknowledgements to one section, I will let their names appear throughout this thesis, wherever their presence feels most meaningful.

Here I will take the space to thank Johan Redström for accepting the role of opponent at my defence, alongside Lucy Suchman, Daniela Rosner, Cristina Zaga, and Helena Strömberg who kindly agreed to be the members of the grading committee. I look forward to their questions and input in unpacking and troubling the content of this thesis.

This work was funded by the Wallenberg AI, Autonomous Systems and Software Program – Humanity and Society (WASP-HS) funded by the Marianne and Marcus Wallenberg Foundation and the Marcus and Amalia Wallenberg Foundation.¹

¹<https://wasp-hs.org/projects/the-rise-of-social-drones-a-constructive-design-research-agenda/>

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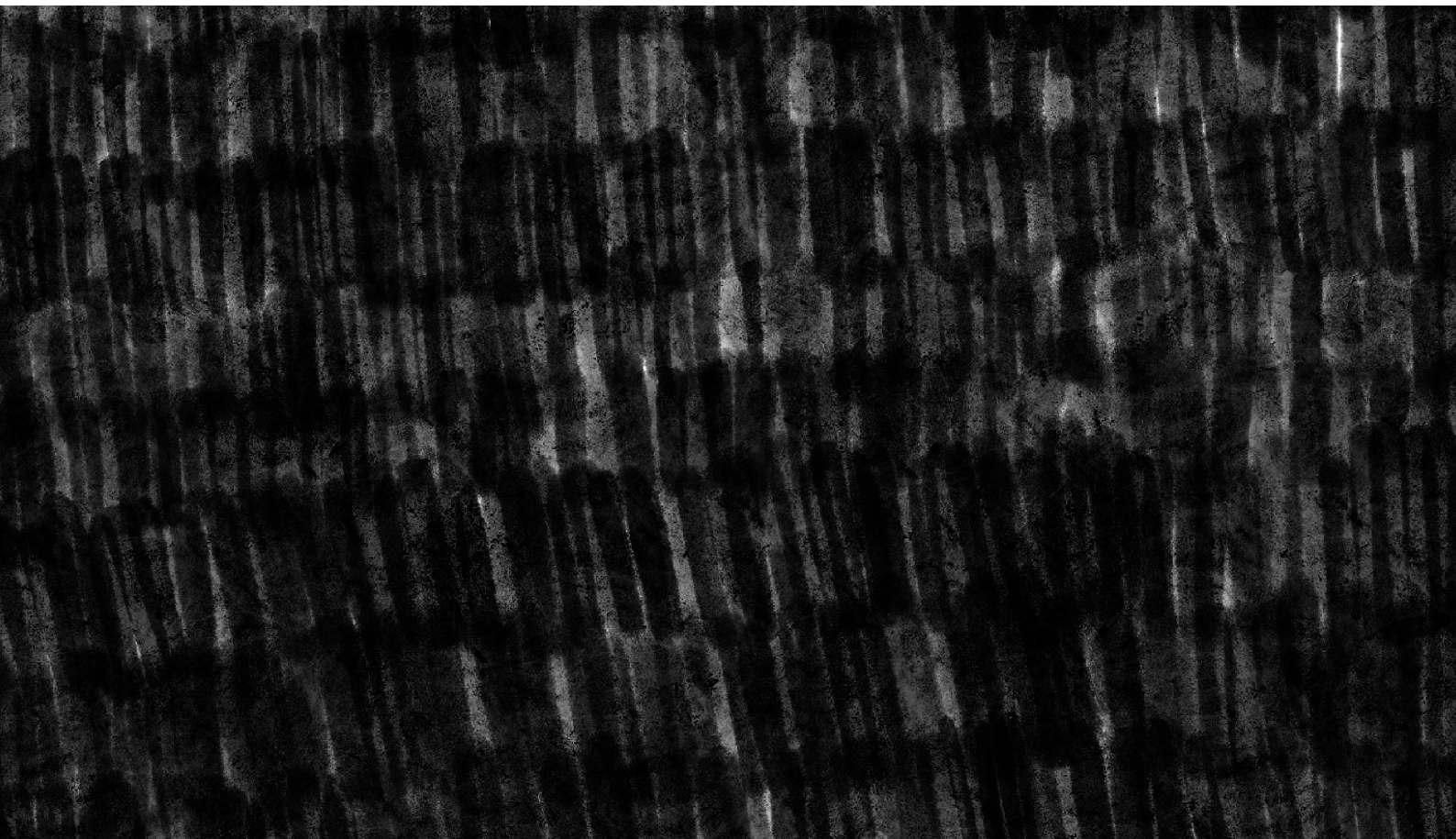
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Part I

The Compilation



Chapter 1

Introduction

The turbulent conditions of the world unavoidably inscribe themselves within the ways we design and inquire through design. Designers can no longer operate as detached problem-solvers; the crises of our time demand attentiveness to social, political, and ecological contexts. This expansion of the role of design is a well-established and long-standing topic of discussion within the field¹. Within interaction design, the rise of digital technologies and AI, the concentration of power in tech giants, and the intensification of inequality challenge traditional notions of authorship, agency, and responsibility in the practice. Design research too must continue engaging with complexity, embrace uncertainty, and respond to shifting realities. In this sense, the work of design—at least within the privilege of academia—has started to move beyond producing solutions, to instead engage with, reflecting upon, critiquing, and at times amplifying the tensions of the world it inhabits and creates. All of this, to the potential point of complete rupture of the field. Such a difficult navigation relies on understanding and shaping new design sensibilities, and purposefully critiquing what design knowledge entails or assumes.

Based on a seemingly simple brief—studying and designing social drones—this thesis transverse the changes in how I understand design knowledge. While it starts at drones through autoethnography and field work, it takes a turn towards reconsidering the role of design in the world. In fact, it represents such a substantial shift that it fundamentally questions and refutes my own starting points. Beginning at a certain naiveté towards design knowledge and arriving at disillusionment; the thesis discusses how design research plays a significant role in forming the design researchers themselves—both in theory and in practice. In line with a large body of work turning design knowledge from a simplistic solution oriented discipline, I propose instead a critical turn of perspective towards the design researchers and what that epistemology is doing to *them*. Rather than putting the emphasis only on the published work itself, I discuss sensibilities and relational practices as the work happening outside of the formulaic boundaries of academic discourse, extending it towards everyday making and rethinking—or rather re-living—theory alongside others.

The research described in this thesis moved with its time, shifting as the world shifts, attentive to the fractures, urgencies, and contradictions of the moment. It bears witness to the unfolding realities within my life and the world it exists in, allowing the work itself to be shaped by the context in which it emerged. These changes are a normal (and even expected) part of doing a PhD. In fact, shifts in worldviews are a

¹I must however note, that designers are not—and can perhaps not be—particularly well equipped for this. As we approach the end of the thesis, I very much lean on simply admitting we are not sustainability capable of this expansion within the constraints of this profession.

desirable part of research. But in this case, the outcome of the thesis itself is a form of knowledge that centres those precise shifts and changes, and attempts to synthesise them as design sensibilities, entangling my personal life and my small doings with the collective leanings we either meet with silence or with mattering.

The aim of this thesis is to encourage others to bring their own sensibilities to the limelight as an endeavour across theory and practice, carefully assessing and articulating how they (and others around them) have transformed and been transformed by them. This surfacing becomes a point of contact with others, a site of camaraderie, and an opening for a more diverse set of sensibilities to take place within design. Making sensibilities explicit has evident political implications, as it allows for a more democratic and accessible form of knowledge production, while simultaneously making visible what each theory pre-figuratively becomes in the lives of those who put them in practice. While this may generate dissent between, let us speculate an example, a neo-liberal and a Marxist sensibility; that discordance is where design research ought to thrive. Articulated sensibilities make contestation possible, particularly when explicitly part of design programs. This contestability is a desirable outcome and a generative space for practice/theory.

By telling many stories that form the dark matter² of my work, I formulate an encouragement to rethink design practice and research as based on the urgent collective sensibilities we need to develop.

1.1 Context: Designing Worlds

The work in this thesis started at the end of 2020, and it is most definitely not impermeable to the polycrisis. I was born in 1988 and came of age during a time that felt stable and full of promise, when the fall of the Berlin Wall symbolised new beginnings. The ozone layer crisis still resides in my memory as proof that humanity was capable of collective problem-solving. Since 2020, humanity has faced a series of crises that have exposed the fragility of our social, political, and economic systems. A global pandemic upended daily life, revealing deep inequalities and the inadequacies of public health infrastructures, while technological giants expanded their reach, reshaping economies, politics, and culture. Conflicts have intensified³, with the ongoing genocide in Palestine, the prolonged wars in Ukraine and Sudan, and the widespread violence in Myanmar and the Democratic Republic of the Congo, serving as painful reminders of the human cost of unresolved political struggles and the persistence of injustice. At the same time, the rise of far-right movements across the globe has challenged democratic norms, spreading disinformation and inflaming social divisions. Environmental catastrophe has accelerated, compelling a growing recognition that unrestrained capitalism is quickly driving the planet towards ecological collapse. Amidst these crises, the rapid development of artificial intelligence has simultaneously offered (allegedly) unprecedented possibilities and provoked urgent ethical and societal questions. These transformations surface the interconnectedness of contemporary challenges and the undeniable need to rethink and re-mantle the structures that govern our world.

²Dark matter is an invisible form of matter that doesn't emit or interact with light but is inferred to exist because its gravity affects the motion of galaxies and large-scale structure in the universe. While it has not been directly detected, the gravitational evidence for it is extremely strong and widely accepted. A tip of the hat to my good friend Joe Lindley who often talked of dark matter as a fundamental part of design work. His guidance and generosity is the dark matter of this thesis. I am sure he will describe it more of it in more poetic and citable forms in the near future.

³<https://acleddata.com/series/acledd-conflict-index>

In the meantime, design as a discipline struggles to find a way to exist when its main purpose is still novelty and the intention to develop and produce more things, in a world already at the brink of ecological collapse. Despite many calls for unmaking [1], [2], undesigning [3], refusal [4], [5], critique, considering post-growth, and dealing with existential crisis, it is still unclear how designers can make a livelihood without further compromising the survival of the planet. Design research turns its attention to feminism, post-humanism, and the more-than-human as a possible turn [6], acknowledging the entanglement of all our actions and our role in the imagined worlds we are supporting. But this philosophical turn has material effects in the designers themselves, while potentially further distancing practitioners from their constraints.

This thesis is poised in between many of these theories, coloured by the world that produced them. My work suggests a certain introspective yet collaborative look into the design researcher in the form of articulated sensibilities, in alignment with the realities portrayed here. While this thesis is not addressing this polycrisis directly, it is deeply affected by it. I am but another voice in a choir of concerned researchers, contributing to an important collective turn towards forms of being a designer that grapple with the contemporary impossibilities of our practice. It culminates in a call to earnestly consider design as potentially pre-revolutionary, including the possibility of completely dismantling itself, as the ultimate cost of the field's growing socio-political sensibility.

1.2 Context: Drones

This thesis is situated within the framework of “*The Rise of Social Drones: A Constructive Design Research Agenda*”, a project funded by the Wallenberg AI, Autonomous Systems and Software Program – Humanity and Society (WASP-HS). WASP-HS is a Swedish research initiative that focuses on the societal implications of artificial intelligence (AI) and autonomous systems, aiming to encourage interdisciplinary knowledge in the humanities and social sciences.

The project's core objective was to explore how drones, particularly autonomous ones, can be integrated into everyday life—hence referred to as “social drones”—in a manner that is beneficial and ethically sound. The argument is that drones are increasingly⁴ being utilised for various purposes, including transporting goods, assisting individuals with disabilities, and performing tasks in hazardous environments. As these technologies become more prevalent, it is crucial to examine their design, regulation, and the nature of human-drone interactions to ensure they serve societal needs effectively and responsibly.

Design is portrayed as central to this understanding, for it is through design that drones are endowed with presence, purpose, and agency in the social world. The shape, behaviours, interfaces, and material choices of a drone are not neutral, carrying embedded values and assumptions about whom the drone serves, who is made visible or invisible, and what forms of activity they enable or preclude. A drone (or any other robot) might be conceived as a helper, reliable, a companion [7]—or else an observer, a sentinel, an enforcer. Such ambivalence marks design as both a site of complicity in power and a terrain of possibility.

My earlier research, presented in the licentiate thesis “*From the Ground Up: Designerly Knowledge in Human-Drone Interaction*”, laid the foundations for this project by arguing for a re-framing of human-drone interaction (HDI) through a designerly lens. That work responded to a notable absence of design knowledge, critical reflection, and situated

⁴Towards the end of the thesis this very sentence will be put to scrutiny.

engagement in the field, positioning drones as sociotechnical assemblages entangled with everyday life—and hence also needing to be studied in mundane ways. Through four distinct yet interrelated studies, I explored alternative methods and perspectives: a longitudinal autoethnography with my children that unsettled the user/bystander dichotomy in HDI [8]; a pictorial that reflected on sketching as a site of epistemic negotiation [9]; a concept-driven design experiment, “Wisp”, which resisted solutionist framings by reimagining drones as companions for breathing [10]; and a visual method for researcher dialogue, Conversational Composites, which embraced ambiguity as a generative dimension of design knowledge [11]. These contributions rely on phenomenology, narrative, and critical design, while also championing experimental forms of publication such as pictorials. This trajectory established a commitment to situated, reflective, alternative, fringe, and plural modes of inquiry⁵.

Two of these publications (Paper I and II) are also part of the content of this thesis, which takes a turn in being less concerned about drones, widening the lens to questioning what exactly is this design knowledge I seemingly defended as fundamental in HDI⁶. This transition is grounded on continued work with the technology, but putting the emphasis instead on the shifting ideas behind “designerly knowledge” that I have developed since.

1.3 Context: My Life

Due to the deeply situated nature of the work in this thesis, it is important I also contextualise the work within my own life. This section is less to be seen as a positionality statement, but more as a placeholder for the many versions of me that follow along the unfolding of this thesis.

I was born and raised in Portugal, born in the late 80s and raised in a quite optimistic decade. My parents are socialists, although I do not remember them being particularly active in political discourse. I spent a lot of time with my maternal grandparents who lived in a small humble apartment in a community where everyone knew each other and the streets were our playground. A great part of their adult lives was spent under fascism, as the regime was only toppled in Portugal in 1974.

I attended private catholic school until I was 18, after which I directly enrolled in a public university. While I probably decided I wanted to be an architect when I was 8, at the end of highschool I hesitated and wanted to study psychology⁷. I did enrol in architecture school at the University of Lisbon.

During my education as an architect I (unknowingly) became a phenomenologist. The degree was poised on philosophies of the primacy of experience and embodiment authored by philosophers, anthropologists, and architects alike [e.g. 13]–[18]. The tacit and subjective nature of architecture, as well as the necessity for a visual language were undisputed notions. Simultaneously, much of my education was grounded in authors such as Edward Hall [19] and Christopher Alexander [20], who aimed to find ways to create a common language for architects and urban planners. As it turns out, this foundation became a constant point of return throughout my PhD.

⁵A heartfelt thank you to Audrey Desjardins for being the discussant for my licentiate thesis. Her generous but probing advice has made me reconsider much of what I had proposed as future work.

⁶I even published a paper on *Championing Design Knowledge in HDI* which I am no longer certain I can fully stand behind[12].

⁷My mother convinced me otherwise, she promised to pay my education in psychology later if I regretted it. I might want to cash in that promise sometime. She has been my biggest support and I am so grateful for her, and for all her love and care. She is so proud of me even though she has no idea what my work is about (probably better that way).

Halfway through my master's I moved to Sweden for almost a year to do an internship, returning a year later after having finished my degree in 2012, where I have been living since. In 2014, amidst frustrations with immigration and infertility, I decided to study Interaction Design and Technologies at Chalmers part-time⁸. I ended up birthing my first daughter throughout these studies and never finishing them, as I transitioned from student, to teacher assistant, to lecturer in design methodologies and HCI. In 2018, when my second daughter was born, I ended up quitting my job as an architect at a small studio where I did incredibly interesting design work with great colleagues to take a full time position as a teacher at University of Gothenburg, staying at the same division. In all honestly, I miss that day-to-day practice of architecture quite often.

During COVID, the position as a PhD student at the same unit came out with the brief explained above. I decided to apply even though I was not even remotely interested in the technology itself; but I was keen to keep the possibility of continuing a career in academia as I find teaching some of the most rewarding and impactful work one can do. What follows is a more or less chronological retelling of the six years between 2020 and 2026 when my PhD took place, with the birth of my third child, who followed with me to my first academic conference: Creativity and Cognition 2022 in Venice.

1.4 Epistemology and Methodology

Although a transdisciplinary approach to Human-Computer Interaction is a given [21], along with an acknowledgement of the many entanglements it entails [6], this thesis places itself in navigating ways of knowing within design. A fundamental characteristic of design as a discipline is the connection through artefacts and processes, bridging theory and practice into making; often as a response to open-ended or ill-structured problems [22]. Foundational texts in design point to this dance between other disciplines. In 1979, Archer [23] argued for 'Design' as the third area of education, poised between sciences and humanities; defined as "Design with a capital D" which means, according to Cross *"the collected experience of the material culture, and the collected body of experience, skill and understanding embodied in the arts of planning, inventing, making and doing"* [24, p.221].

Cross coined the widely used term 'designerly ways of knowing', which brought a tension. In his words: *"we are certainly faced with the problem of being more articulate about what it means to be 'designerly' rather than to be 'scientific' or 'artistic'"* [24]. This differential way of describing design as distinct from other disciplines [25] is the sign of a young discipline. It is often poised between what were already known as accepted forms of knowing. Importantly for my work, I present an understanding of design that is not limited to design thinking [26]. But design does well in uncertainty and in loose definitions, without having to establish stable boundaries and favouring plurality. As according to Johansson-Sköldberg, Woodilla and Çetinkaya, *"from an academic perspective, this plurality in discourses within designerly ways of thinking is not a sign of weakness but rather a sign of maturity."* [26, p.132]

Imprecision of a brief is a constant in design discourse, hence the popularity of terms such as 'wicked problems' [27]. Wicked problems are complex, ill-defined issues with

⁸This decision influenced my path, and is the reason I ended up doing a PhD. My co-PhD students at Interaction Design have been a constant support for me. I am particularly grateful to Marti de Cet, Negin Hashmati, and Ziming Wang for being around for this journey. And to our latest addition, Samantha Hookway, whose best work will likely always struggle to conform just as mine did, and who has made plenty of space for ranting together. Looking forward to keeping those conversations going with her and hope our paths intentionally keep crossing.

many interdependent factors, actors, and changing requirements, making them difficult or impossible to solve with a single, clear solution. They lack a definitive formulation or stopping point, and attempts to address them often create new challenges or unintended consequences. Building on this, Buchanan argues that design attempts to reduce the “wickedness” through placements—*“the tools by which a designer intuitively or deliberately shapes a design situation”* [28]. A placement is not a category, it is not fixed, but rather a fluid position with porous boundaries, marking a *“systematic approach to the invention of possibilities”*. In his words: *“design is a remarkably supple discipline, amenable to radically different interpretations in philosophy as well as in practice. (...) It is a history of the changing views of subject matter held by designers and the concrete objects conceived, planned, and produced as expressions of those views”* [28, p.9]. This blurriness also makes space for ambiguity to actually become a resource for design rather than something to be avoided—even in the making [29]. It is my stance that designers (both in practice and in research) must build high levels of tolerance towards uncertainty and vagueness for this precise reason, learning to work with it and let it permeate in all outcomes.

Buchanan’s description of conceptual placement assumes that each designer has a set of placements which they have developed and changed through experience, and that can be described as intuitive⁹ or serendipitous. Therefore, the skills of a designer lie in *“natural or cultivated and artful ability to return to those placements and apply them to a new situation”* [28, p.13]. This very notion is aligned with what I will come to present as design sensibilities; but with an added nuance on how these become intentional and collective forms of knowledge on their own, while still carried and fostered by designers themselves and the choices they make and are willing to become.

This epistemological stance of considering a ‘designerly way of knowing’, has implications to methodology. However, the work I have conducted troubles this stack, since sensibilities are (and should be) volatile to shifting epistemologies. Hence the work in this thesis takes a placement and situated attitude, with different methods as appropriate to each particular case. While they all fall under the umbrella of design or design-adjacent methods, they cannot be coherently described as a whole. As a curatorial note, this thesis does not take a stance on assuming or discussing the differences between artistic research and design, as I feel they overlap to an extent that does not need justification. My own background in architecture led me towards leaning on conceptual work, and has leaked into practices that can be understood as artistic; but I would rather frame them as a subversive way of designerly knowing. In this context, I am hence not interested in drawing boundaries between artistic and design research, as I do not find that distinction generative. Below, I describe instead what can be seen as a methodological *“attitude”* to the premises given by assuming there is a multitude of ‘designerly’ ways to go about research.

1.4.1 Digging where you Stand and In the Small

The work in this thesis is concerned with small gestures. It is profoundly contextual and immediately mundane. Such an approach resonates—beyond the feminist framing already portrayed above—with the idea of *“gräva där du står”* (“dig where you stand”) comes from a Swedish workers’ education and history movement in the late 1970s, initiated by Sven Lindqvist and the *Gräv där du står-gruppen* [30]. It invited workers

⁹Small note, the use of intuitively—or natural as below—is against what I defend later on in this thesis. Intuition indicates a skill that can hardly be learned, which I disagree with. Of course our bodies and biologies have to some extent an influence on what we can do, but what I oppose is the idea of a natural ability or talent.

to research and document their own workplaces and local histories—to uncover the invisible labour, social relations, and material conditions of their everyday environments. Rather than relying on external experts¹⁰ or official archives, people were urged to begin inquiry from within their own lived experiences, recognising themselves as knowledge producers. In fact, re-telling from their perspective what the story of their own workplace is, rather than have it mandated on them. The phrase has since travelled, becoming a metaphor in feminist and participatory research for grounded, situated, and collective ways of knowing.

Digging where we stand aligns closely with what Carl Di Salvo [31], following Binder, Brandt, Ehn *et al.* [32] and Ehn [33], describe as working “in the small.” Both articulate an ethos of grounded practice that privileges the local, the situated, and the collectively enacted over universal or large-scale approaches. In participatory design, the small names a space where democratic experimentation unfolds through everyday acts of collaboration, negotiation, and care: a domain where design becomes a form of civic inquiry rather than solutionist intervention. While Di Salvo discusses the notion of in the small for democratic design experiments; here I turn the attention to design research as a profoundly relational form of making. Beyond thinking of design knowledge as an abstract practice of storytelling, I turn the spotlight to the actual small gestures we make in the material composition of the stories we tell. Almost as if considering the micro in the small.

Within design research, this translates into approaches that create artifacts of alternative ways of living, working, or relating to technology here and now, rather than only imagining them in speculative narratives. However, to turn these alternatives into realities, then the relational practices in design research must also be allowed to be relevant visible labour—even when they are actions done in the context of “digging where you stand” and “in the small”. My thesis reasons on the development of design sensibilities as work in the small that centres care and relational threads, questioning the boundaries of what design knowledge is. They stay with the actual trouble that is being and becoming a design researcher, while still carrying an attitude that sees materialities, experiences, friendships, and encounters as forms of knowledge beyond text or polished design artifacts.

Such an approach has had clear implications on the methods chosen below. For example, a significant part of the work relies on thick descriptions from first-person approaches, which have long been present in the field (albeit still met with resistance at times). Researchers have embedded themselves in their studies through life-logging [34], reflected on embodied practices such as horseback riding to inform soma design [35], lived without mobile phones to interrogate interaction design [36], or removed self-tracking technologies to question dominant paradigms in fourth wave HCI [37]. Closely related, autobiographical design positions designers as participants in their own design processes [38]. Examples include long-term domestic projects [39], explorations of sleep through autoethnographic ‘kits’ [40], and the use of telepresence to support intimate relationships [41]. Such work is particularly generative in intimate and more-than-human contexts [42], [43], and has produced collective *design memoires* that resist reductive, solutionist accounts of technology [44].

Beyond individual projects, Desjardins and Ball [45] articulate best practices for autobiographical design, emphasising genuine need, participation, intimacy, reflexivity,

¹⁰This is not to say others should not be involved in design, but very much in resonance with “nothing about us without us”, even design focusing on accessibility should be done by those from within, building on their own lived experience.

and authorial voice. They argue that the blurring of professional and personal roles is not a weakness but an important resource, as embracing dual roles enables new reflections to emerge [45]. They recommend sincerity about the originating stories of a project, deliberate time for reflection, transparency about collaborators and authority, and methodological inventiveness. First-person methods therefore offer a way to surface situated, embodied and affective knowledge “in the small” that might otherwise remain obscured. At the same time, autoethnography is shaped by power and privilege: not all researchers are equally able to tell their stories, and doing so may carry personal and professional risks [46], relying on the researcher’s well developed sensibilities towards the contexts they are positioned within.

The use of first-person methods is but an example of the impact of this approach. While much more could be said about the methodology of the work in this thesis, I refer instead to each paper section which makes a case for each specific set of methods chosen. They all align in one way or the other within a phenomenological and design-oriented ethos, with a certain tendency to probe at the edges of academic knowledge through adversarial perspectives.

1.5 Assumptions and Premises

This section serves as a contract between me and you (the reader). It establishes a number of assumptions and commitments we need to agree on before moving on. In the reasonable case you do not agree with some of them, I ask for some patience, tolerance, or suspension of scepticism. The intention of this section is to bypass to a shared understanding on the underlying premises of the work in the thesis without fully presenting the background to each separate chapter.

1.5.1 Design Exists as a Form of Knowledge

The work unpacked in this thesis leans on an assumption that design knowledge exists in its own right¹¹. As a discipline, it comes packed with its own epistemology as described above, albeit it could be argued it is not that distinguished from many other forms of knowledge¹². Here, I could draw from the work of many canonical authors who have deeply shaped my own views on design, from Schön [48] to Cross [24], and many others. But instead, I will explain what is important to have in mind while reading my work.

The type of design knowledge described here is one that takes in consideration design as post-solutionist or even anti-solutionist [49]. There is a large body of work within academia dedicated to that precise turn. However, what matters here is that, as Silvio Lorusso would say, *designerly ways of knowing* is self-fulfilling¹³, what he calls the “*designerly unconscious: the “givens” of (a) design culture, automatically employed and rarely questioned, without which (that) design culture would not exist as such. These are the conditions that make designerly thinking and knowing possible.*”

By simply agreeing that even without full alignment on what exactly design knowledge is, there is a culturally shaped identity of a designer, and what a designer *should*

¹¹I will not dedicate an extensive chapter to make that claim, rather through the proliferation of design educations, design conferences, design histories, design critiques, one can leap to the conclusion that design (or the illusion of it) does exist in this world.

¹²For example, Herriott defends that there is not much difference between research-through-design and conventional scientific methods. I do not necessarily agree with this critique, but there is of course significant overlap between design and many other disciplines.

¹³<https://silviolorusso.com/publication/existential-solutionism-designerly-unconscious/>

do. The same applies to a design researcher: one that uses forms of making and methods aligned with research-through-design [50], [51] to both study and change the world. A designer—as commonly understood—should recognise and know what is a wicked problem, what is design thinking, and should have the ability to boil down large issues to something that can be tackled and addressed through making. A design researcher is also allowed and expected to problematise and criticise the bigger issues, advocating for the user. Of course, we must keep in mind contemporary work questioning first what a user even is, or even the harmful effects of such a concept [e.g.: 52], [53]. See specifically, Ahmed’s critique of use, particularly on Chapter 1, “*Using Things*” [54]. She argues that “use” is never neutral, but is shaped by social norms, politics, histories, and relations of power. She shows how institutions and objects are organised around particular expectations of use, meaning that bodies or practices that do not fit these expectations—such as racialised, queer, or disabled bodies—are often treated as disruptive or improper. Ahmed therefore critiques functionality as a political concept, showing that what is considered “useful” frequently serves to maintain existing structures of power and exclusion. Those structures have often been ignored by design and kept outside design spaces.

In their process, designers should know how to acknowledge the importance of tacit knowledge [55], reflexivity [48], and undoubtedly represent a phenomenological leaning (emphasising experience, perception, and meaning as lived by humans, rather than abstract theory or purely functional or technical concerns)¹⁴.

In this sense, the work in this thesis is rather in line with what would be expected from a designer, although it problematises most of the premises; questioning the need to portray issues as wicked, and fully refuses the value of contemporary framings of design thinking. At the time of writing, design has become a discipline that includes rather formulaic ways of knowing, leaning on quite established sets of methods. So while the work relies on accepting the discipline materially exists, it does not necessarily conform to all of the canonical practices within design, rather it is more focused on discussing the types of knowledge that are or not accepted within that canon. My work is less concerned with what *is* designerly ways of knowing, and more preoccupied with the corporeal effect those ways of knowing in how we pass them on to others in the form of design sensibilities, and finally how they may impact the things that design is supposed to do in the world.

1.5.2 Knowledge is Situated

The notion that knowledge is situated challenges the idea of universal or objective understanding by asserting that all knowledge emerges from specific contexts of practice, culture, and experience. While most researchers working within interaction design will find this a given, it still comes as a point of conflict in the intersection with computer science¹⁵, when the latter still largely contains a positivistic and technocentric approach. The assumption of situatedness means that what designers know and how they come to know it is inseparable from the environments, tools, materials, and social interactions in which design takes place—requiring large degrees of contextualisation in academic texts.

¹⁴Of course, many within human-computer interaction will note how this is not in fact as common as one would think. Plenty of work within interaction design has had to put significant effort on bringing a phenomenological stance to the field. My kind and caring supervisor Kristina Höök is one of these people. She also lives what she preaches and I am so grateful she was generous enough to give me so much of her time. She has understood me at times I could not even understand myself.

¹⁵Not all design operates within this space, but interaction design in particular tends to have at least some connections to engineering.

Some of this contextualisation is done nowadays through statements (positionality, funding, etc [56], [57], although even that with its own issues [58]).

Lucy Suchman [59] first articulated this view in her seminal work *Plans and Situated Actions*, arguing that human action—and by extension, design and research activity—is always contingent upon the local circumstances in which it unfolds. It constitutes a foundational critique of classical cognitive science and artificial intelligence models of human action. The central argument of the work is that human behaviour cannot adequately be understood as the execution of pre-formulated plans. Instead, action is inherently situated: it emerges contingently through individuals' ongoing interactions with their material, social, and institutional environments.

Similarly, Donna Haraway [60] in her influential essay “Situated Knowledges” critiques the “view from nowhere” and advocates for recognising the partial, embodied perspectives that underpin all forms of knowing. Within this discussion, she contrasts feminist critical empiricism with radical constructivism, the latter of which treats scientific facts as entirely socially constructed and therefore risks collapsing all knowledge claims into relativism, where evidence and material constraints lose their force. By contrast, feminist critical empiricism acknowledges that knowledge is always situated and shaped by social conditions, but maintains that it must remain accountable to material realities, empirical engagement, and methodological rigour.

This is related to Sandra Harding's notion of “strong objectivity” as a feminist matter. Harding argues that knowledge becomes more objective when researchers critically examine their own social position and the power relations shaping knowledge production [61]. She critiques traditional claims of neutrality in science, arguing that dominant forms of knowledge often reflect the perspectives and interests of socially privileged groups while presenting themselves as universal. Strong objectivity therefore requires inquiry to begin from the lives and experiences of marginalised groups, since these perspectives can reveal assumptions (or/and sensibilities) that remain obscured within dominant frameworks. In the in-between, and in Haraway's words: “Feminist objectivity is about limited location and situated knowledge, not about transcendence and splitting of subject and object. It allows us to become answerable for what we learn how to see.” [60]. Design relates to this spectrum in an interesting way, as objectivity materially *becomes* in the objects it produces, but also in the processes it accepts as ways to knowledge claims. It is that ability to *answer for* that this thesis revolves around.

This attention to reflection during practice resonates within design to Schön's account of reflection-in-action [48]; where he situates design knowledge within the designer's ongoing engagement with materials and situations. This implies that design knowledge is not fixed or purely theoretical, but evolves dynamically through practice. My view however, is that design includes materialities beyond the physical, and is deeply entangled with the theories and methods it applies, even when crafting critiques. The separation between theory and practice is less precious than it appears, as theory is also deeply contextual, relational, and situated in its plural interpretations.

Within design, it is quite unquestionable that knowledge resists generalisation, otherwise we would probably have one optimal universal chair and design would be over¹⁶. These perspectives position design knowledge as contextual, embodied, and performative—constructed through doing, reading, reflecting, and interacting within specific socio-material settings. A central argument to my work is that as part of the situation is the researcher's ongoing and fluid sensibilities. The articulation of these

¹⁶Obviously, there were modernist attempts to achieve universalism, but we can agree that the modernist project has failed in multiple ways.

sensibilities is portrayed as a fundamental move towards situating that knowledge even further, to the point of risking very little transferability, as each design experiment relies profoundly on the unique and *unrepeatable* people involved in it. It is not to say that design knowledge can not travel, but rather that the journey it takes has strong situational components that rely on intentional collective makings.

1.5.3 Design Thinking is not Design—A Eulogy

This thesis is not about design thinking. In fact, it rejects the premise that design can be tamed into a formalised process. Even John Chris Jones himself [62] understood in the preface of the new edition of *Design Methods* that the idea of simplifying design to a set of methodological steps was at best naive. Much of the scholarship within HCI still leans heavily into IDEO's version of design, and ready-to-practice guides fitting into double diamond models, or industry-led notions such as design sprints. All of these can be packaged under the broad definition of *Design Thinking*.

Design Thinking, once lauded as a revolutionary and democratising methodology promising human-centred innovation, has too often become a hollow ritual, co-opted by organisations eager for the appearance of creativity without substance. It has certainly served design as a way of acquiring clients. It is not inherently bad, yet its failures are glaring: it supports unrealistic expectations, a superficial understanding of design processes, and has too often been instrumentalised as a managerial tool [63]. Far from the radical, reflective practice its founders envisaged, Design Thinking is frequently reduced to a set of steps, a rigid and linear process that ossifies rather than enlivens design work.

Critically, Design Thinking, particularly in its innovation and management adaptation, oversimplifies complexity by breaking problems into digestible chunks, which masks systemic entanglements and obscures the political dimensions of design. It encourages solutionism, valorising intervention over contemplation, and discourages restraint or refusal. Its depoliticising tendencies ignore structural inequities and power asymmetries, framing design as a neutral problem-solving exercise rather than a socially and ethically situated practice. Design Thinking often presents itself as a “silver bullet”, assumed to be universally applicable, which belies the careful, contextual thinking real design requires.

The managerialisation of Design Thinking further dilutes expertise. By emphasising process over craft, it renders the art of design secondary to performative outcomes, creating the illusion of innovation while eroding the depth, skill, and critical evaluation essential to design practice. Without sufficient time, resources, and supportive organisational culture, Design Thinking risks being little more than theatre: ceremonial workshops and sticky notes masking the absence of substantive change.

Here we lay Design Thinking to rest. We mourn its transformation from a reflective practice into a commodified methods toolkit, oversold and misunderstood, applied indiscriminately, and stripped of its ethical and political force. We rage at its oversimplifications, its solutionism, its downplayed politics, and its managerial co-option. And yet, in this eulogy, we also recognise the opportunity it grants us: a cautionary tale, a warning of what design must not become. Its death opens the path to practices that refusal—design that interrogates, resists, dismantles, and reimagines.

This farewell to design thinking matters as a detachment point, to represent that this thesis places itself in an opposing position to such simplified and reductionist views



Figure 1.1: A grave found in Scotland at Scone Palace. It comes to illustrate the death of Design Thinking but also a somewhat amusing misspelling of Memento Mori: a Latin phrase translating to “remember that you [must] die”. If you find typos in this thesis, remember that they also happen in gravestones. In the age of LLMs, a little typo is a charming reminder of humanness.

of design as a discipline. The political implications of design thinking pre-suppose a de-valuing of design knowledge. Although it can be argued that the intention behind the toolkit oriented view of design is to allow for a more democratic practice, there are certainly other ways to invite that opening (among others, participatory design and design for appropriation).



((a))



((b))



((c))



((d))

Figure 1.2: Four memes by Felix Kosok (instagram:flixflexen) showing some of the political implications of design thinking. The caption reads “A debate as a séance, that revealed: Design Thinking is not dead. It’s a spectre. And spectres — as Derrida pointed out — are most powerful precisely because they are neither fully present nor fully gone. They operate in the in-between. You conjure them even as you claim to exorcise them. Whoever speaks today about human-centred design, about user research, about divergent thinking... speaks in the language of Design Thinking. The hype might be fading. The inheritance doesn’t. Even though it’s not neutral. Design Thinking arrived with a neo-liberal grammar built in: the assumption that complex social and political contradictions, also known as problems, could be decomposed into solvable design briefs.”

1.5.4 Theories are Lived (Not only Inspirational or Prescriptive)

Within the different strands of design research, theories are either described as prescriptive or as sources of inspiration or aspiration. Within HCI, the outcomes of design research are still largely expected to be prescriptive (for example through guidelines, recommendations, patterns, or frameworks), although there are many strands of research that consider the designed artifacts as theories or at least participants in the theory-making (such as within research-through-design). Often, rather than adhering rigidly to a single theoretical position, designers engage in an eclectic drift across multiple perspectives, drawing selectively on concepts that resonate with the problem or situation at hand (what could be described as productive oscillation [64]). Not only that, but as I argue, they are often picked by relational proximity, as heirlooms, or revived from previous experiences or random encounters. Such an oscillation is not a flaw, but the capacity to adapt to mutating conditions and contexts. But more importantly, it means the theories are lived, not just prescription or inspiration, but part of the path of each researcher, individually and collectively.

This fluid relationship with theory reflects the emergent and exploratory character of design practice, where theoretical ideas are translated, reinterpreted, and hybridised through making and reflection. Theories are not ends in themselves but catalysts that open new ways of seeing, interpreting, feeling, discussing, and articulating design experiments. Design thrives in this pluralistic landscape, where moving between paradigms becomes a part of exploring the boundaries of knowledge.

Admittedly, this view can also invite critique. A possible concern is that excessive eclecticism risks diluting theoretical rigour and coherence, paired with a pick and choose attitude that hinders in-depth exploration, or even potentially combining incommensurable notions. When theory is treated as a toolbox for inspiration or a springboard for shallow alignment with ongoing trends, rather than as a structured framework for inquiry, it may lead to superficial appropriation or misinterpretation of concepts. Potentially, when cherry picking from theories and combining them; a less in-depth interpretation may attempt to combine two incompatible ontologies¹⁷. This can weaken the epistemological foundations of design research, making it difficult to build cumulative or communicable knowledge across projects and disciplines. Such an instrumental or extractive use of theory may obscure the deeper philosophical commitments that shape knowledge. However, I think eclecticism is unavoidable as theory permeates our lives; and as intersectional and pluriversal beings, two truths can co-exist.

However, it is also possible to assert that it is precisely in the overlap and curiosity for a panoply of theories that the advantage of design knowledge lies. At times, an approach that operates under completely different and even contrasting ontologies may result in worthwhile outcomes that are intriguing as much as they are tentative. The lack of preoccupation with watertight reasoning and coherence brings a space for sharing in a democratic, provocative, and open manner. In my work, I posit that it is worthwhile to keep that curiosity alive, an openness to finding many theoretical sources in the most unlikely places, and still treating them seriously. That rigour (or seriousness) means theories go beyond being inspirational or prescriptive, and becoming instead lived. In this thesis I consider theory much of what could perhaps not be classically seen as such, including tales, myths, walks, poems, and plays. Such a repertoire of possible theories might be precisely what leads into the argument I support in this thesis: that theory and practice are hardly separable and co-exist in the bodies of the researchers.

¹⁷ Although, I have to remark, if done consciously, this could be a quite generative space for design.

1.5.5 Design Research thrives beyond Publication

This premise is concerned with form, but it is a call to consider that design knowledge lives in a struggle. In much of academia, including design research, the peer-reviewed paper is regarded as the ultimate form of knowledge because it conforms to established norms of validation, dissemination, and permanence. The academic paper functions as a stable, citable artefact through which knowledge claims are scrutinised, verified, and shared within a recognised scholarly community. This format aligns with the scientific tradition, privileging propositional and textual forms of knowledge that can be reproduced and debated across contexts. This particular assumption obfuscates a large body of fundamental relational work, making it difficult to justify or make visible.

This clash of such an expectation with design epistemology in terms of outcomes has been lifted by many (see, for example, the series of workshops and events on ‘alternative outcomes of HCI research’ [65]) as this emphasis often contrasts with the field’s inherently practice-based, experiential, and material modes of knowing. As a result, design researchers have long struggled with how to translate the tacit, embodied, and situated dimensions of practice into a form that meets academic standards of rigour while still honouring the richness of design activity. Many have pointed to how important it is to recognise the rigour of other outcomes such as video [66], the prototypes themselves [67]. Simultaneously, there is a double emphasis on both the outcome of design as the designed ‘things’ [51] and the lessons learned during designing processes. The dominance of the paper, then, reflects both the institutional frameworks of academia and the ongoing negotiation between practice-led insight and conventional scholarly expression which brings a tension on what is left out of the publications.

While there is ample space to bring demos to conferences, and write in alternative ways such as in pictorials (largely informed by the rich tradition of annotated portfolios within design and the emphasis on visual knowledge [68]), it is still somewhat agreed that the papers are at the centre of an academic life. For example, it is expected in my own context for a compilation thesis to mostly be centred in the published work¹⁸ rather than a compilation of artifacts. In this thesis, I question this towards regarding the researchers themselves as outcomes of design research.

What I mean to call attention to is that the core of my work is not in the papers, nor do I see them as my impact in the field. Through years of a mixture of field work, collaborations, workshops, and conferences, I have seen design research as a fully relational practice. All of these are sensitive to temporality and ongoingness—whereas academic papers in their current form are static and frozen in time. I am certainly not alone in this view [e.g.: 6], [69]–[71], but the interest here is in lifting the importance of all the (collective) research practices often left outside of what is contemplated as a worthy knowledge contribution. In this subsection the statement is simple: papers are not the ultimate form of academic knowledge. This becomes particularly important in Chapter 4 where I discuss some of the work I have done outside of the expected primacy of papers, looking into stickers, events, embroidery, and other design makings.

1.5.6 Stories Above Abstraction

When thinking back to architecture school, the moments that marked me prioritised an oral and personal relationship to storytelling. The architectural history course I attended was held by teacher who used his own travel slides in a carousel slide projector, with a

¹⁸For pragmatic reasons, I have allegedly been advised to tame my upset against this fact by conforming to what is asked of me—which I have dutifully attempted to—there are still some papers in this thesis.

dimmed light to tell a blend of his lived experiences and theories they related to. Stories form one of the foundational structures of human existence. “*Story is central to human understanding—it makes life livable, because without a story, there is no identity, no self, no other.*” [72, p.505] If narrative is tightly woven with identity and meaning-making, it follows that storytelling should be understood as an intrinsic element of research practice. Within HCI, a range of established methods (such as use cases, personas, and scenarios) already depend upon narrative constructions as a means of articulating design spaces. In fact, design itself is storytelling of possible futures.

So in this thesis I try to stray away from the impulse to offer a view from nowhere by weaving stories throughout, remembering that:

“The narrative text refuses the impulse to abstract and explain, stressing the journey over the destination, and thus eclipses the scientific illusion of control and mastery; and the episodic portrayal of the ebb and flow of relationship experience dramatises the motion of connected lives across the curve of time, and thus resists the standard practice of portraying social life and relationships as a snapshot. Evocative stories activate subjectivity and compile emotional response. They long to be used rather than analysed; to be told and retold rather than theorised and settled; to offer lessons for further conversation rather than undebatable conclusions; and to substitute the companionship of intimate detail for the loneliness of abstracted facts.” Ellis and Bochner [73, p.744]

Design practice itself is deeply entwined with the blend of fact-fiction [74], rejecting the binary opposition and recognising that what we call facts are always produced through situated practices, instruments, stories and partial perspectives. Fiction is not made-up unreality but a mode of world-making that can reveal how “facts” are constructed and how they might otherwise be composed. Facts are, hence, largely composed of fiction and vice versa.

Design dabbles in fact-fiction because it routinely moves between material constraints and speculative possibility: prototypes, speculative design, and scenario-building all treat imagined futures as if they could be tested in the present. In Haraway’s terms, design becomes a kind of “speculative fabulation”, where telling and making are entangled, and realities are not merely represented but actively assembled. This is largely a story oriented view of research. Blythe notes that “some HCI work also included entirely fictional narratives developed in the process of design. Design is a fundamentally imaginative act that involves picturing the world as other than it is.” [75, p.5400]. Stories and narrative forms are seen as important to design research within HCI [76], and often the empirical ground of papers (see for example the stories of designers in interdisciplinary work [77]).

There are, however, important issues in the use of narrative in research. Stories are meant to resonate, but their interpretation depends on the audience’s own lived experiences that they might be fully misinterpreted, and at worse impossible to scrutinise. Their evocative nature carries a certain risk of being compelling and persuasive in ways that outweighs their value as illustrative. One might critique that stories are so heavily dependent on the voice of the narrator that they lack the diversity of more abstract knowledge. This thesis is necessarily a blend between my story and the stories of others that I retell.

Although research narratives or stories are often presented with a sense of closure (stories that begin and end), such endings are necessarily provisional. Even this thesis

and the ways I retell if changes through time and will continue to change. The stories elicited within research do not conclude when a paper is published; the lives from which they emerge continue to unfold beyond the frame of the study. There are, of course, dangers in this emphasis on stories and imaginaries. A radical view on this might either state that (text). In this thesis, I attempt to honour those threads by telling stories beyond the papers and presenting explicitly provisional ideas that have not been abstracted from their context.

1.5.7 A Summary of the Premises

These given premises intend to guide the reader towards what might be expected in this thesis. Fundamentally, I am attempting to bring together the multiplicities of design as a form of knowing, while also digging deeper in what is the role of such an eclectic discipline. Hence these premises should function as an attempt to move the reader closer to my position; where design is seen less as a functional tool but more as an untameable way of enquiring through making and constructing the stories around those makings in a situated way. This ties strongly to understanding what a design sensibility is, and how, from my perspective, it might at times struggle with fitting within mainstream academic practice. However, that struggle is central to pushing boundaries, and it works in our favour to fully acknowledge disagreement with the premises we are given. These premises mirror themselves in the structure of the thesis, where we will move from attempts to grapple with drones as a design material conforming to *designerly ways of knowing*, towards the introspective diggings into sensibilities and corporeality, finally tentatively reverting to forms of refusal within the narratives of design research.

1.6 Structure of the Thesis

The work in this thesis is divided in an introduction followed by three distinct chapters that can be read nearly independently¹⁹.

Chapter 2 falls within what could have been expected from my PhD funding. It shows a set of work that studies drones from design-oriented fringe perspectives including auto-ethnography, visual methods, and sensory ethnography. It culminates in a final publication, a critique that questions the imaginations our academic work is supporting. The chapter collects a conference paper, a journal article, a pictorial, and a critique, leveraging a variety of formats making similar points in orienting research towards the importance of lived experiences and resistive approaches to the research at hand.

Chapter 3 compiles work outside of what my funding project encompassed, with a set of projects that are instead central to my views on design (such as discussing shadows as a material, or understanding how technology influences experiences of pregnancy), following my own sensibilities towards design that I wanted to investigate. It compiles three papers written through methods at the margin or as side projects (parallel to those in chapter 2), all of them heavily reliant on the articulation of sensibilities and tied to

¹⁹This structure was closely scrutinised by my dear colleague Staffan Björk, who has throughout the years helped me make sense of my own senseless thoughts. Alongside him, I acknowledge all my other colleagues at Interaction Design, old and new, including Sus Lyckvi, Dimitrios Gkouskos, Thommy Eriksson, Olof Torgersson, Cecilia Bjursell, Josef Wideström, Pelle Dahlstedt, Jasmina Maric, Pauline Belford, with the later additions of Morteza Abdipour and Aris Alissandrakis. They have all been so supportive, even when I felt awful—and hence was probably awful. Without Eva Eriksson, who has since left to Aarhus, I probably would not even have thought of doing a PhD. Her enthusiasm and work ethic is inspirational. I also acknowledge Morten Fjeld in his examiner role.

architecture. The chapter collects a pictorial and two conference papers. This set of papers has been instrumental in the relational orientation of my practice, helping me in finding friends and comrades in the community. This chapter is somewhat self-contained, relying on first-person perspectives (both mine and others') with an emphasis on design theory/practice. Its main point is to argue for design sensibilities as a fundamental form of design knowledge.

Chapter 4 is what I would call late breaking madness. It is a collection of stories and examples that question the arguments previously presented in favour of design knowledge; suggesting instead that we need less of it or for it to manifest differently. It considers the urgency of today and suggests that design should perhaps cease to exist as a practice altogether, until a revolution has happened. Leaning on my rebellious nature and anti-capitalist sensibility, I reflect on my practices of embroidery, sketching, stickers, and collective poster making. I argue for the centrality of gifting practices in design research through acts of piracy in academia. The chapter builds on taking relationality and sensibilities seriously enough to the point of rupture, and in contemplation of the end of design as we know it.

Ultimately what this means is that each of the chapters can be read on its own without large dependencies on the previous ones, even if the story is tightly woven together. So if your interest is on ethnographic approaches to drones and robots, read Chapter 2; if your main interest is in design theory and embodied forms of design knowledge, I recommend Chapter 3. However, if you feel like being taken on a mostly unpredictable journey through provocative thoughts on design research, then go ahead and read Chapter 4, but with an understanding of what happened until that point.

1.7 What This Thesis is Not

This thesis is not about drones—rather it uses drones or my own ways of working or refusing to work with them as an example of how my own sensibilities were constructed alongside. At times, it even purposefully stays away from drones as a reaction against tech-centric funding schemes. I was admittedly poorly prepared to design with such a complex technology even if I was willing to, especially not to the level of wonderful colleagues like La Delfa [78] who has put significant work into developing a *Mechanical Sympathy* with his drones. However, this was not the reason for the growing discomfort. It came to me as I progressed from my first papers, and mostly grounded on my own first-person perspectives developed in detail in the following chapters. Equally, I do not single out drones as the root of the problem or the scapegoats of technology, but they are a somewhat controversial case of technological development that has caused significant harm—even on a domestic level. I use them as a case, and remove their centrality from my work.

This thesis is not a coherent tale from top to bottom keeping to one argument. Rather, it tells parallel stories that converge in chapter 4. It can be argued that the notion of design sensibilities transpires through the whole body of work, but I advise to not expect the narrative to always be very clear and targeted towards that point. This requires some tolerance from the reader to a certain level of rambling and personal detours.

This work is not told in an authoritative voice that prioritises a unique voice, or establishes itself on grounds of scientific knowledge. Rather, it acknowledges an ontology of collective knowing in the compilation of exemplars that echoes each other in different ways. Assumedly so, it rejects the expected formulaic obsession within academia on

novel contributions. I attempt instead to join a choir of voices and put emphasis on the collective work and relational practices that happen in between. In that sense, the ideas presented here will resonate with a large body of work aligned with feminist practices and other allegiances.



Chapter 2

Refusing the Inevitability of Drones

2.1 Background

As mentioned above (section 1.2), my work was framed by a grant centred on understanding drones in society named “*The Rise of Social Drones: A Constructive Design Research Agenda*”¹, funded through an initiative for humanistic and social scientific research in AI and autonomous systems. Part of the work in this chapter is a repetition of the contents of my Licentiate thesis [79]. A more comprehensive literature review and background on drones specifically already exists in that piece of work, which I will skip here.

The project was grounded on making connections between the spreading of consumer drones in society and the growing research field of HDI (Human-Drone Interaction)² through design research in a critical manner. It included the need to take a stance on drone technology and drones as a design material, and the licentiate thesis is a reflection of that personal process.

As I started investigating drones, I realised my questions required much more than good knowledge of the state-of-the-art drone research. They demanded a renewed look into what it means to be an interaction designer, how the discipline of design is (or should be) relevant to HDI, and a more developed situated and first-hand understanding of drones.

Because the funding of this project was targeted towards AI, my own work goes hand-in-hand with the developments in automatisisation. In fact, many commercial drones already incorporate advancements in AI. The field of HCI seems to expect drones to quickly become autonomous, but the truth is that there are more than technological issues in this—to fully make a judgement on the risks of autonomous drones in order to create a valid legal framework for them will likely take decades. There is, however, considerate peril in the fast development of autonomous features and potential applications.

Hence, my work did not focus on supporting the development towards automation, but was oriented towards discussing and critiquing the current relationships between humans, drones, and other actors. Beyond that, it was almost mostly concerned with a matter of methodology and what types of knowledge is allowed in this space. Hence, I often approached the work from a rather artistic or subversive perspective. One of the

¹<https://wasp-hs.org/projects/the-rise-of-social-drones-a-constructive-design-research-agenda/>

²HDI is here seen simultaneously as a subset of HCI and a subset of HRI.

questions posed within the project is whether or not the risks of using drones outweighs the benefits. This question can not possibly be answered by one researcher alone—rather, it needs a combination of multiple perspectives.

In this chapter, each paper looks at one particular perspective, not being comprehensive, but attempting to question the necessity of assuming that technological development as given or inevitable.

2.2 Paper 1: Living with Drones, Robots, and Young Children: Informing research-through-design with Auto-ethnography

Fringe phenomena and ‘users’, and in particular children, are difficult to study [80]. There are not only intricate ethical issues to be tackled, but it is also incredibly hard to engage field study participants in ways that generate genuine insight [81]. These fringes also call for unusual ethnographic methods. In this paper, I considered the research gap in Child-Drone Interaction, as well as in first-person methods in Human-Drone Interaction³, and conducted a year-long auto-ethnographic study with my own children. Based on this, I formulated considerations for the design of child-drone interactions

2.2.1 Problem

A simple search on Amazon for ‘toy drone’ generates thousands of results. The market for small flying robots is growing. For example, the DJI Ryze Tello⁴, priced just under 100 USD, is marketed as a tool for education. According to their website: “*We set out to build the most fun drone ever, and we came up with Tello: an impressive little drone for kids and adults that’s a blast to fly and helps users learn about drones with coding education*”. The small drone, weighing only 80g, is said to work in many contexts: “Whether you’re at a park, in the office, or hanging out at home, you can always take off and experience the world from exciting new perspectives”. The website offers a big tag-line stating: “*Relax! Tello’s super safe*” (see figure 2.1).

When looking into the research field, the interactions between children and drones seem to be predominantly perceived as educational, connecting learning goals with the activities the drones support such as racing, photography, or programming [82]–[84]. This is not surprising, as there is plenty of research with other robots leaning in the same direction. A variety of social robots such as Pepper and Nao, are currently being explored as tools or companions in education and critical thinking [e.g. 85]–[89]. But children are encountering drones in their daily lives, outside of the educational framing. There is a lack of research in Child-Drone Interaction [90] which may be due to safety, ethical, and privacy regulations when considering children as users. A valuable research direction would be to include children as participants in most studies, including opinion surveys—which is naturally a difficult thing to do with very young children.

Furthermore, an utilitarian perspective does not cover the full spectrum of drone encounters. Methods that are not seeking to optimise are particularly helpful here. How can we study genuine and situated interactions between children and drones? What happens when a parent is driving a drone at home? There are many potential applications and dimensions of what drones may be. Through a literature review, Herdel, Yamin and Cauchard [7] present drones as ‘helpful’, ‘amicable’, ‘functional’, ‘knowing’, ‘sensational’, ‘reliable’, and ‘unusual’. While the unusual category could fit a lot of drones, there seems to be a resistance in researching the ‘creepy’, the ‘unreliable’, the ‘invading’, the ‘unsustainable’, the ‘unwanted’ drone in the context of the home.

³The text in this section is a slightly edited repetition from my Licentiate Thesis [79]. Also, in retrospect, the idea of research gap is only a rhetorical device that I now avoid using. It seemed at the time to be the expectation for my work, but it is clearly based on an old-fashioned positivistic view of knowledge I no longer adhere to. Similarly, the fourth article in this set of papers reflects on another problematic rhetorical device, quite similar to this fabricated establishing of research gaps.

⁴<https://www.ryzerobotics.com/tello>

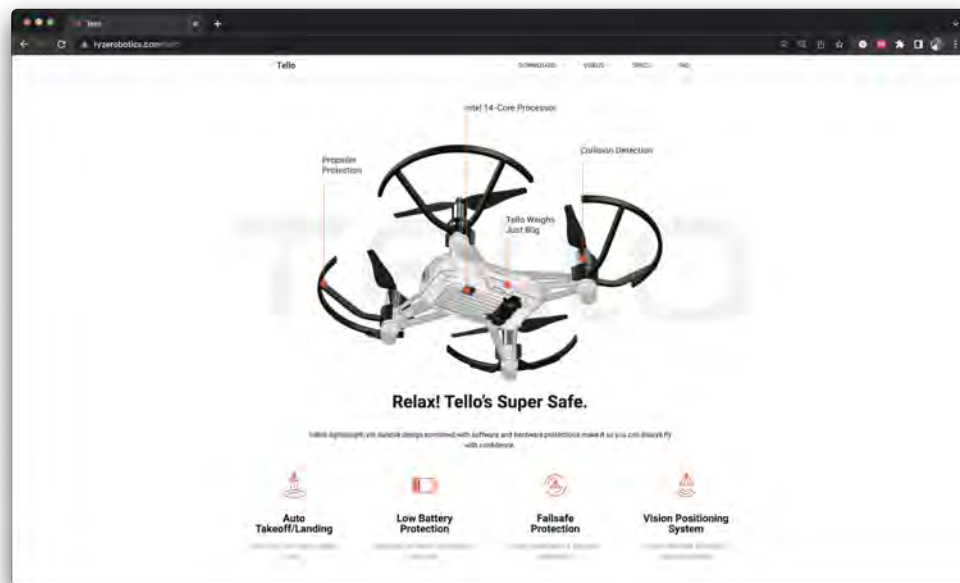


Figure 2.1: A screenshot of the Ryze Tello website showing the tagline “Relax! Tello’s super safe. Tello’s lightweight, yet durable design combined with software and hardware protections make it so you can always fly with confidence.” <https://www.ryzerobotics.com/tello> captured on the 13th of December 2022.

2.2.2 Methodology

At the time I started this study, I had planned other interventions with families and RtD probes. But before sending out drones to people’s homes, I wanted to find my own understanding of what it would mean to incorporate this technology in a domestic setting. Studying children is definitely not without ethical issues, and I felt that I had better control of consent in my own home⁵. I was both afraid and eager to learn about which troubles would surface.

The issue of studying child-drone interaction could be tackled in many ways. I chose to dive deep into an autoethnographic study, serving both as a first encounter for me with a longitudinal interaction with a drone, but also as a way to experience those interactions along with my two children (aged 6 and 3 at the time). Choosing autoethnography was only made possible to me because I was already a mother. But since I had the opportunity and my family was in agreement with it, I found it to be the method that could best translate in situated, intimate, and honest accounts of engagements with the technology. Evidently, the context of COVID-19 also shaped this choice, as I started my studies in a context of uncertainty and lockdowns, even if they were not as prevalent in Sweden as in other countries.

However, I did not want my small scale, statistically insignificant study to result in the alienation of a community that does not fully understand autoethnography. Therefore, for my own organisation and following Desjardins and Ball’s call for inventiveness in autobiographical design, I decided to pair the autoethnography with a sociotechnical systems framework. This framing is well explained in the paper itself.

⁵There is absolutely no way this text could exist without Magnus’ love and support. He let me go about any shenanigan with and without our kids, and towards the end of my PhD had to carry so much of the labour of raising our children every time I was away at conferences. His dedication should not be left unseen, and I owe him immensely.

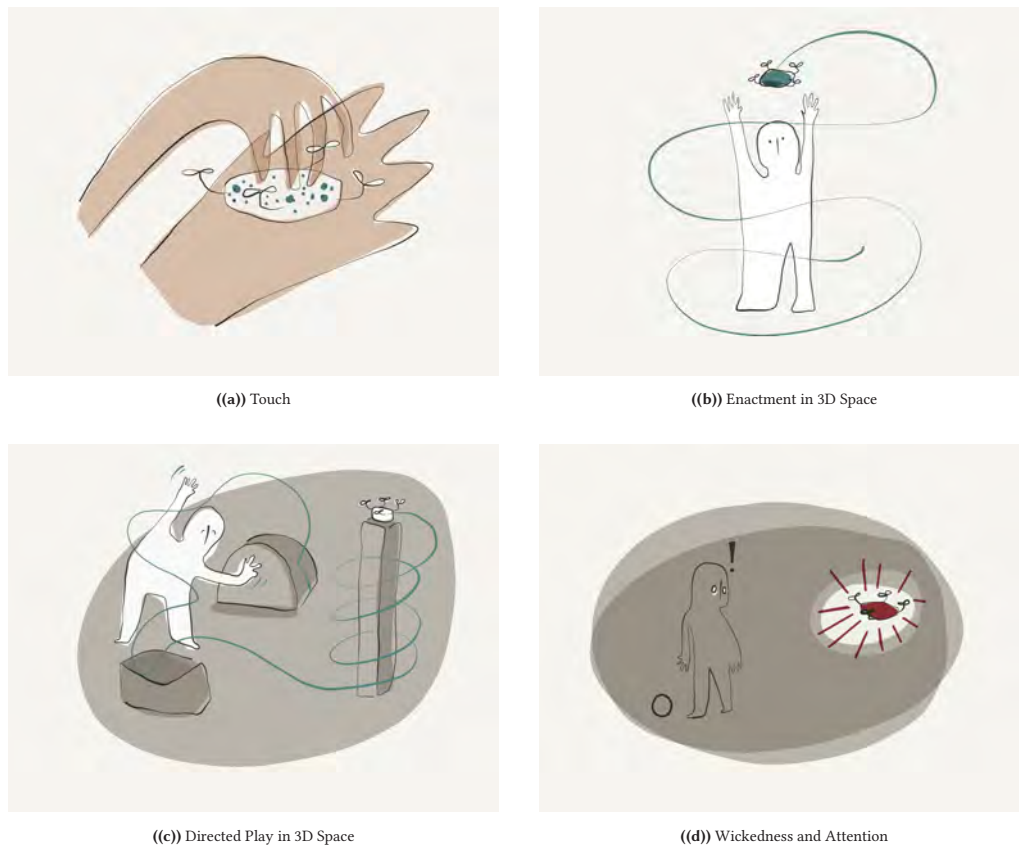


Figure 2.2: Four out of the Nine Opportunities for Child-Drone Interaction

2.2.3 Contribution

The year-long autoethnographic study was the source to a number of narratives which can be read in the original paper. This paper contributes with one of the first studies seen in research in Child-Drone Interaction, particularly in such an intimate context. Here, I will dedicate this space to some of the ideas that were left out. The summary of the study takes the form of **design opportunities for Child-Drone Interaction Design**. As I describe in the paper, these are not to be seen as guidelines, and have no prescriptive value. Rather, they should be used as ideas to challenge and problematise the interactions we design for – they are not implications for design [91], but problematisations in design. I made a set of illustrations, one for each challenge, which are not included in the publication. As I produced these images, the implications of the challenges became clearer to me, so I will dedicate this space to expanding on what can be read in the published paper. In Figure 2.3(a) the drone can be seen poised as a bird-like metaphor – that metaphor can be generative and inspiring [92] as to what types of idle actions a drone could embody. Birds are not either flying or dead. For example, in Figure 2.3(c), there is a reinforcement of the user-bystander dichotomy as it could be assumed – a user driving the drone in the foreground, while a bystander is shrinking faded into the background. I will discuss some issues with this dichotomy below, but I wonder why I decided to represent this opportunity as such. This illustration surfaced the damaging values that such a relationship could generate.

One important contribution of this paper is the **deconstruction of the user-bystander dichotomy in HDI**. For example Baytaş, Çay, Zhang *et al.* define social drones as “*applications where fully autonomous drones operate in spaces populated by*



Figure 2.3: Five out of the Nine Opportunities for Child-Drone Interaction

human users or bystanders” [93]. We are far from reaching fully autonomous drones, but even within the clearly visionary definition, there is mention of users or bystanders. The choice of the word bystander comes with some assumptions such as perceptions of passivity which could derive from ideas such as the ‘bystander effect’. Are we really placed as either users or bystanders in interactions with drones? Or is it the way drones are designed that will eventually create bystanders? I discussed these questions further in a book chapter [94] where I argue: *“It is a matter of care to prevent people from assuming they have no agency in their interactions by avoiding the use of the word bystander. A bystander can be a citizen, a lawmaker, a politician, a school child, an annoyed girlfriend, a mother, a terrified person, a nurse, a dog, a flowing river. Placing all of these agents under the umbrella of bystander—a word that ultimately means witnessing something but not being part of it—is neglecting the importance of being part of the network of care. (...) The definition of bystander is less helpful than it would be to carefully identify the involved parts and what agencies are possible in the sociotechnical assemblage.”*[94]

There is one detail I left out of the original paper which has to do with autonomy. At first, and without me noticing, the children were unaware that I was the one driving the drone. And not once did they act as bystanders. They tried actively either fully avoid the drone, or try to communicate with it. The user-bystander dichotomy was irrelevant in our interactions with the drones at home. As noted by Höök, Eriksson, Louise Juul Søndergaard *et al.*, our reasoning often uses dichotomies such as the one presented, but more dangerously, through our design processes, we tend to reinforce the patterns [95]. Moving away from dichotomies in design (in this case through soma design) should mean that our work should be grounded in experience rather than *“in preconceptions about how to divide the world into conceptual categories. On the other hand, those concepts are deeply ingrained in our whole ways of being and will be enacted and re-enacted in our design work, unless we are able to ‘see’ them, deconstruct them, attend to them, and thereby design in novel ways”* [95]. My autoethnography helped me clearly ‘see’ these concepts and seek to deconstruct them whenever possible. **It is a worthwhile research agenda to design drones that do not assign anyone the role of a bystander.**

2.2.4 A Post-Publication Reflection

This autoethnography in this paper was conducted while I was pregnant with our third child. I had considered the reason as to why I had suddenly decided this study was over one year after it started. But the reason was no other than the fact that he was born. When the paper was submitted I had not yet arrived at this conclusion—but it is quite interesting from a sociotechnical systems perspective. In the words of Kayany and Yelsma: *“Humans and technologies in households are interconnected as members or elements of the same system. When a new element is introduced to the system, the system goes through a process of integration that may result in the re-organization of roles, relationships and functions”* [96]. Indeed, the system was reshuffled and thrown into a state where a drone could not continue to fly indoors. We had a fragile baby to consider – hence it was no longer ethical for me to continue the study (see figure 2.4 for an illustration of this).

This surfaced one of the true values of autoethnography. The study was long over, the narratives told, and yet insight was still generated. I wonder how often participants in studies care to, or are given the opportunity, to retell and re-frame their understandings. This change in the system is a type of micro-ethics which is necessary when doing research with children [97], but equally applicable to any work with others. While these

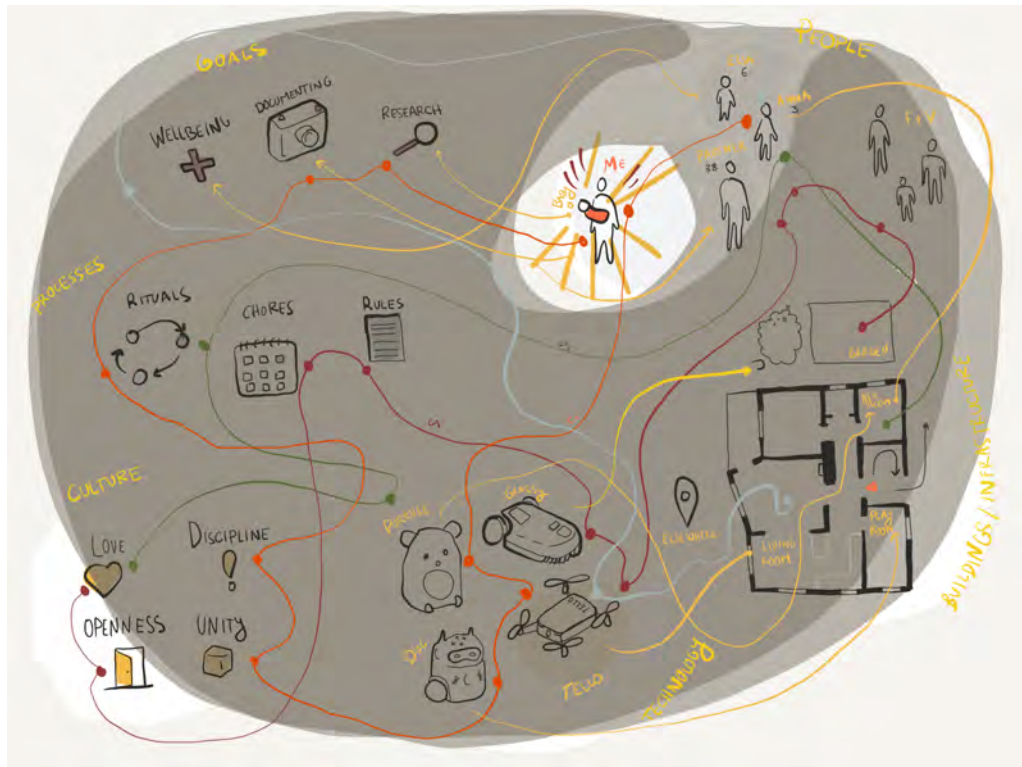


Figure 2.4: A new image of the sociotechnical system that was our family as described in the paper. Here, attention is called to our new baby.

reflections came late, they open for a sensibility towards participants and a questioning of where narratives end in the context of academic publication. For example, I do regret not pushing to have my children as authors in this paper: but I was not even fully aware such a resistive practice would have been possible. Such a change in authorship would have signified a bigger move and a narrative that would better make visible their influence and agency.

After my presentation of this paper at NordiCHI'2022, I was approached by a researcher. He said, in a friendly manner, “*you present this work so convincingly, it makes me wonder if I am taking my research too seriously*”. At the time I laughed and confirmed that he probably did so. But months later I still think often about this statement. Autoethnography is still widely perceived as ‘not serious’. My attempt with this paper was precisely to find ways to make this method more approachable, and understood as indeed rigorous. The notion of the distance between research and researcher is visible in many forms: one could argue I take my research so seriously that I dedicated one year of my life documenting my interactions with my children, finally exposing them to the community in open access. Helms reflects precisely on some of these troubles, in her own research [43]. As she states “*I am not in a position to speculate or fully understand the diverse possibilities of how my work might be misread, or even interpreted as intended within its full academic context, and still give rise to feelings of discomfort or harm for people external to my family. This might happen now or later. Yet as I reasoned for that publication and my child’s potential later interpretations of it, I anticipate opportunities to discuss them in person with her*” [43, p.9].

As the follow up of this paper along with other first-person methods (see Section 2.5,

for example), I organised a workshop at the ACM DIS conference in Copenhagen⁶. The workshop was very well attended, and amongst the participants, there was a significant focus on re-articulating what rigour really means within first-person methods. Much of the work that follows in this thesis, particularly in Chapter 3, reflects contributions towards those exercises in rigour at the border between academic writing and the entanglement of the writer/designer. The deep positioning of the researcher within the research itself both in practice and in theory relies strongly on the ability to engage in first-person methods. In that chapter, I will turn to the description of sensibilities as a way of maintaining a reflexive practice deeply embedded into design research.

⁶I thank Claudia Núñez Pacheco for all the support, and for being an inspiration on how to avoid people-pleasing.

2.3 Paper 2: Conversational Composites: A Method for Illustration Layering

In this pictorial, we present a method for conversations through visual techniques. We suggest the use of a combination of tangible and digital media as a platform for exchanging interpretations of narratives surrounding a given prompt. In this case, we used narratives of hobby drone pilots as the starting point⁷.

2.3.1 Problem

Conversations held between researchers are often verbal or in written format. We tend to neglect other forms of communication—for example through visual tools such as photography and drawing. These forms of communication are, albeit possible criticism of ocular-centric views of the world, excellent at allowing for ambiguous thoughts to come into play in the dialogue [98], [99] rather than prioritising clarity at all costs. As mentioned by Yurman, the ‘loose’ nature of sketching is like a metaphor for an invitation.

At this point in the research, most of my work had taken the form of textual discourse. However, thankfully, when presenting another pictorial at the ACM Creativity and Cognition conference in 2022 [9], I took a look at which workshops would take place in the same conference – and found Yurman, Juul Søndergaard, Pierce *et al.*’s workshop entitled ‘Venetian Drawing Conversations’. Their call for submissions included developing “*visual dialogues resulting from the merging of drawings created by different people*” [101]. They encouraged applications from researchers, scientists and creative practitioners working in or interested in areas such as: “*Experimental design methods, Drawing as research, research-through-design: artefacts as knowledge production, speculative and critical design, Ambiguity and defamiliarization, visualizations as design methods, Ideation and futuring techniques, and Aesthetic interactions*” [101]

One of my research questions at the time revolved around the relevance of designerly approaches to HDI. So this call was tailored to my interests. I suggested to my supervisor that we should put together a submission, finally having a suitable excuse to put into practice some of our artistic practice as part of our project. Sara has extensive practice in watercolour and other painting as a hobby. We decided to combine the two topics we most care about: participant data and artistic/designerly approaches.

We were inspired by the idea of *exquisite corpse*, a playful technique invented by surrealists, where one image is collectively created in the folding of paper. In *exquisite corpse*, a group of people share the task of creating a human figure, and each participant is assigned a fragment of the composition, starting for example at the head, and folding the piece of paper so that the next participant continues with the shoulders without having seen the previous drawing. At the end, the revealing of the whole picture is usually quite amusing, a mixture of ideas mashed together into one body. This game has been inspiring to other researchers in HCI [102]–[104].

Abstract novelty and amusement were not exactly our priority – we wanted to create a method that would allow for turn-taking and still preserve some of the revelation elements of *exquisite corpse*.

So we needed a prompt. We decided to make use of an online forum we had been members of since the start of the project. We put together a simple anonymous questionnaire asking hobby drone pilots from the Swedish DJI drone owners Facebook

⁷The text in this section is a slightly edited and expanded version from my Licentiate Thesis [79].

group, prompting them to give us short stories from incidents they have had with their drones. Here are two examples of the stories we ended up using:

“It flew away. I used the app litchi and had created a route it would follow, but it never came back. It turned out that I did not think that the stated height is in relation to the starting point and when the ground rose, it came closer and closer to the ground and finally stopped in front of a large spruce and did not know where it would go. There it hovered until the batteries ran out. A resident in the area found it after 1 1/2 years and when I checked the film on the memory card it was clear what had happened.”

“I’m on my 5th drone. I have crashed three drones and that is of course due to the way I use the drone. My drone is a camera dolly and the best movie clip is when you drive backwards and sideways. Unfortunately, you do not see in the direction of travel either. I usually film my grandson, who engages in kite surfing and kite foiling, 2-3 m above the water is usually the best and safest, but sometimes you end up below 1 m and then there is a crisis.”

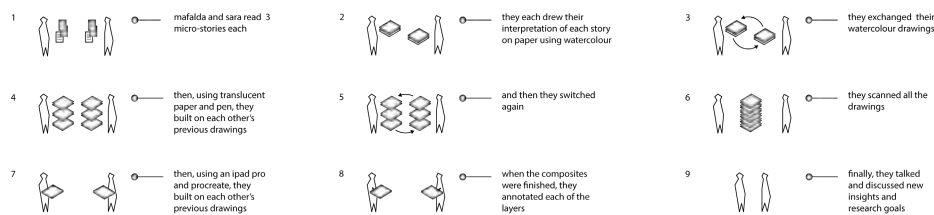


Figure 2.5: How the exchange between Sara and I went in practical terms.

2.3.2 Methodology

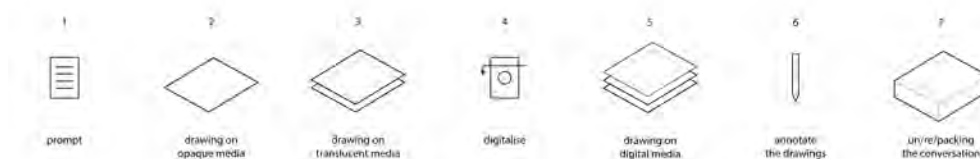


Figure 2.6: A diagram showing our application of the method.

The pictorial describes a method of data analysis through the use of sketching and illustration: *Conversational Composites*. To be able to understand the potential of the method, we applied it as a conversation between me and my supervisor (Sara Ljungblad). Together with Miriam Sturdee⁸, we developed a vision for this method as we move on from our experience and present it as a valuable tool for others. Therefore—we put considerate work into illustrating the process, opening up for alternative appropriations of the method.

⁸It is impossible to properly thank Miriam Sturdee for her effect on my journey. She is a dear friend who has strongly influenced the way I relate to others in this field.

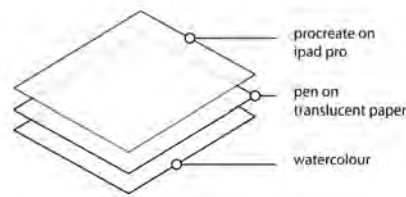


Figure 2.7: The layers we used in the pictorial.

Conversational Composites involves an exchange of sketches and drawings between multiple participants. In this case, there was only two of us, but the method has been used since with more participant. We propose focusing on the physical creation and modification of a composite piece, which allows for the traceability of each participant's perspectives and interpretations in combination with the materials chosen. The final product is made up of distinct layers, each with its own identity, but all contributing to the overall composite. This method can be used by any number of participants—as many as the number of layers. The process begins with a prompt, which serves as the starting point. These prompts can be research questions, requirements, stories, photos of events, user quotes, diary entries, design artefacts, design guidelines, manifestos, theories, and more. Once a suitable prompt for conversation has been selected, the next step is to determine the layers of the composite. It's important to consider the physical properties of the chosen media and techniques when defining each layer. For example, if translucent paper is being used, it may not be suitable to use watercolour as a technique; similarly, if the conversation is meant to remain somewhat vague, then picking watercolour is exactly the right move. The method involves creating and exchanging each layer with the next participant. Each step should build upon the previous content and make use of the current layer's media and technique.

After completing their assigned layers, participants should annotate their work and reflect on any new insights that arose. We suggested that participants read each other's annotations and discuss the composite as a whole, noting any changes or similarities between layers, and how each image was built upon, redrawn, ignored, or left unchanged. The method also allows for the examination of each layer on its own and the rearrangement of the layers to potentially uncover new meanings.

2.3.3 Contribution

Our method is an example of how visual tools can be generative for academic knowledge. Indeed – much of the relevance of designerly approaches in researching HDI comes from their ability in dealing with complex relationships and making visible what otherwise was invisible. Design research, as exemplified by *Conversational Composites*, thrives in the possibility of bringing a multitude of voices onto the discussion in multiple ways. In this pictorial, we presented a set of directions but most of all we noted how its use supported previously unexplored paths. For me, in particular, it made me question some of the future work I was planning.

The importance of more-than-human actors in HDI became more evident to me. Curiously, there was great value in discussing the resulting images with the other participants at the workshop. Their questions were generative to our work with drones,

and indeed showed how incorporating designerly ways of knowing made us move forward in our HDI research. In the re-interpretation of the textual narratives given to us by actual hobby drone pilots, we expanded and rebuilt the stories. The new depictions conveyed other meanings – but more importantly, they became an excellent prompt for further discussion for the workshops this method was envisioned for. The pictorial offers the method to the HCI community in its raw form, although we propose a number of alternatives that can be put into place. We suggest that the technique may be used with other prompts and media. The final artefact generated through our method relies strongly on transparency and collaboration, while still affording a large variance in backgrounds and number of participants.

We envision *Conversational Composites* as a method that promotes interdisciplinary collaboration, helps to flatten hierarchies, and allows for design research discussions to occur in alternative forms that facilitate a deeper understanding. The inherent ambiguity and equal influence of each participant in this method creates a rich conversation that can be productive at levels beyond speech or text. The final step of this method involves analysing and discussing the composite, interpreting it through conversation. This allows the composite to be viewed as a whole and to mindfully consider which elements are visible through the layers and which fade into the background during this process. We ended up using this method in many other contexts, particularly as conversation pieces in workshops.

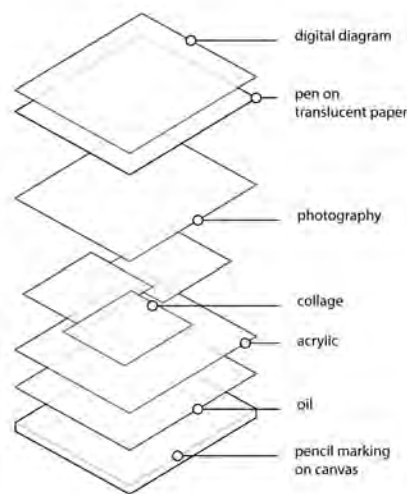


Figure 2.8: Layers we propose as possible for other researchers. We had not imagined many others, such as SCOPY (see below).

When presenting this pictorial, I could have not predicted the effects that proposing such a simple method of analysis would have. Hence, this is a particularly good example of how the static pictorial form of this work has evolved beyond its temporal containment. Curiously, this publication (along with another pictorial I had published earlier reflecting on sketching as a practice of re-thinking designerly ways of knowing [9]), led to many unexpected and diverging threads in rethinking sketching as an epistemic tool. At the conference it was presented, the mere proposal extending the potential layer-able sketching materialities opened up for an interaction with Fiona Bell, whose work was

centred on using dried SCOBY⁹. During the presentation, we engaged the audience by using SCOBY as a layer. The outcome of these exchanges are described in a book about seeing interaction design [105] showcasing the value of pictorials as a publication format. The extension to others and further material experimentations became a parallel thread in my PhD, with an emphasis on the conversational nature of drawing as a surface for discussing ideas that are at times incommensurable. While most of that continuation work lives outside this thesis, the attention to multiple co-existing truths that constitute layers is still conceptually present.

2.3.4 A Post-Publication Reflection

The use of translucent (or tracing) paper and layering of versions is central to architectural practice—probably the first evident connection to my previous experiences that surfaced through. This return to an architectural sensibility (that is central in Chapter 3) was evident even this early in my work. Tracing paper materially enables iterative design reasoning through processes of overlay, revision, and refinement. Its translucency allows architects to test spatial relationships, structural logic, and formal ideas by layering multiple drawings, supporting a dialogue between initial concepts and subsequent developments or edits, along with annotations¹⁰. As both a technical and speculative tool, tracing paper facilitates experimentation while maintaining continuity with established references, making it fundamental to the evolution of architectural (or design) ideas in many voices. The act of layering and composites continued from here on, as a way of thinking visual material and allowing *designerly ways of knowing* to be supported by analysis methods. Indeed — much of the relevance of designerly approaches in researching HDI comes from their ability in dealing with complex relationships and making visible what otherwise was invisible.

This way of working or analysing data opened for a quite different way of relating to the stories told. It was through these stories I started leaning towards de-centring the human; once again rejecting the role of birds, trees, and landscapes as passive bystanders. It made me question some of the future work I was planning as the importance of more-than-human actors became more evident to me. In the re-interpretation of the textual narratives given to us by actual hobby drone pilots, we expanded and rebuilt the stories, colouring them with our theoretical stances and commitments. The new depictions conveyed other meanings—including my consistent reluctance to ignore the many entanglements of drones. All the layers I drew upon surfaced the dimensions of care and neglect I recognised in these stories; making visible the importance of more-than-human agency and the possibility of rejecting drones altogether.

This paper ultimately represents yet another iteration of a certain adversarial-ness and opening to the expected role of drones I kept struggling with. While the post-human thread only led me to certain productive paths, the explicit resistance that leaked through the layers of the composite was surfaced first in this visual way of working. The way in which I interpreted and illustrated the prompts shows a leaning towards refusing the inevitability of drones once more, and a reveal of which forms of care mattered to me.

⁹SCOBY stands for Symbiotic Culture Of Bacteria and Yeast. It's the living culture used to ferment kombucha tea. During fermentation, the bacteria produce cellulose, forming a thick, gelatinous layer that floats on the surface of the liquid. When removed, washed, and dried, this cellulose becomes a flexible, leather-like biomaterial.

¹⁰Some of that work made its way to other workshops on sketching with Andreas Lindegren and others. Andreas has been a faithful and patient listener and good counsellor in all my struggles.

2.4 Paper 3: Drones in the Archipelago: Tensions in Technological Progress for Medical Transportation



Figure 2.9: The drone used during the studies, in the context of the islands in the winter.

This paper emerged from our involvement in and proximity to, an ongoing medical drone initiative in an archipelago region of Gothenburg, where drones were being explored as a means of transporting medical supplies between islands. I was initially drawn into the project through design research collaborations and conversations framed around innovation, access, and logistical improvement—narratives that positioned the drone as a promising response to geographic fragmentation and infrastructural constraints.

This work included a variety of methods, including meetings, site visits, observations, interviews, and even some design work by master students. While the paper does not report on all of these dimensions, they all contributed to what is ultimately presented. As we progressed, it became evident it was difficult to reconcile the rhetoric of technological progress with the lived conditions of care work (particularly from the perspective of the nurses) and environmental unpredictability. Rather than encountering a clear-cut problem in need of a technical solution, I found myself situated within a network of partial commitments, competing priorities, and unresolved questions about responsibility, risk, and fit. This paper takes shape from that position: not offering a simple evaluation of a system, and poised instead as a reflective attempt to account for how a medical drone project comes to be imagined, and justified in a place where care had long been practiced without drones.

2.4.1 Problem

Medical drone projects are frequently framed as unambiguously beneficial interventions, particularly in geographically remote or infrastructurally fragmented regions [106]. In these narratives, drones are positioned as positive carriers of care: efficient and morally justified through their association with healthcare delivery. The archipelago context, characterised by dispersed islands, weather variability, seasonal population shifts, and complex governance structures, was an ideal testing ground for such technological solutions.

The project was initiated and led by regional healthcare and public-sector actors, in collaboration with industry partners and researchers, and funded through innovation-oriented public grants aimed at exploring future healthcare logistics¹¹.

While the funded project was seeking to prove appropriateness, asking whether drones can technically deliver medical goods; our study interrogated what is at stake

¹¹<https://www.vgregion.se/ov/innovationsplattformen/varden/innovationsprojekt/dronare2/avslutade-projekt/dronare-i-goteborgs-skargard/>

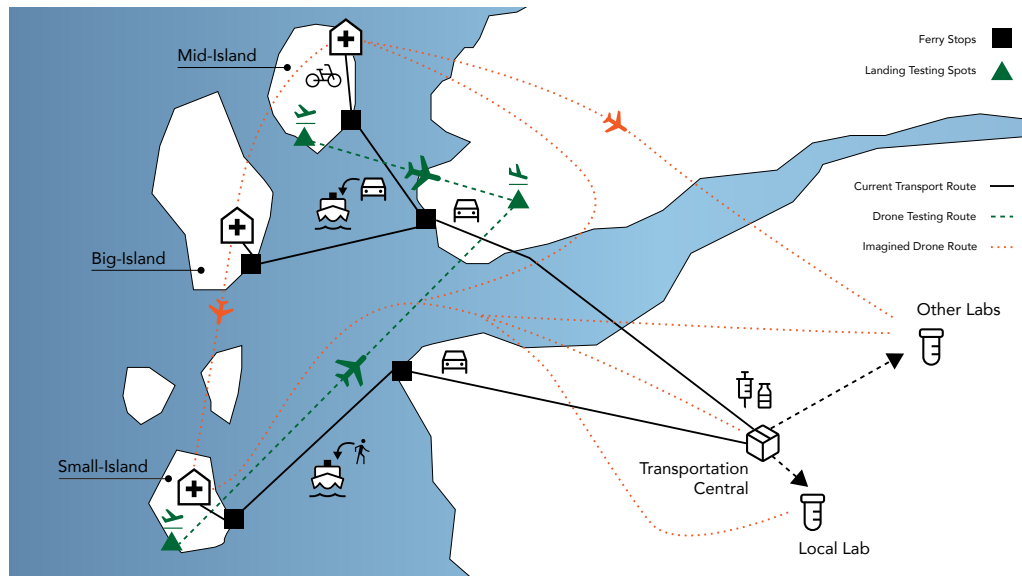


Figure 2.10: A figure with a map of the Gothenburg region explaining the existing transport solution alongside the suggested one with the implementation of drones.

when drones are introduced as infrastructural actors in healthcare systems. The problem was, for us, not one of feasibility, but of tension: between urgency and care, experimentation and responsibility, technological optimism and lived realities. The paper questions whose needs are prioritised, which risks are normalised, and how the promise of innovation can obscure the redistribution of labour, accountability, and vulnerability.

By focusing on a medical drone project in an archipelago setting, the paper exposes how narratives of progress can gloss over local knowledge, pre-defined perceptions of progress, socio-environmental conditions, and existing care practices. It argues that positioning drones as solutions risks simplifying complex healthcare ecologies into logistical problems. More importantly, some of the findings indicated problematic leanings towards using the technology more as a symbolic marker for a progressive healthcare organisation than a tool that would actually ameliorate the situation for either healthcare workers and patients.

2.4.2 Methodology

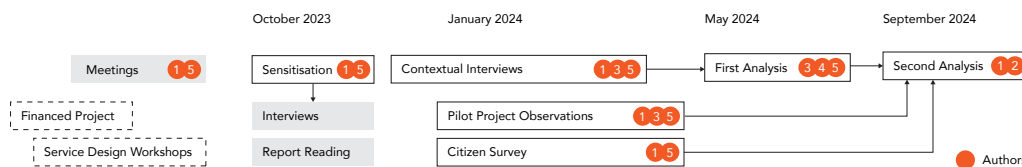


Figure 2.11: The method and process behind this paper explained in a diagram, where the phases can be seen showing how the field work occupied a large portion of the time, and the analysis included two iterations.

As mentioned above, the paper is grounded in qualitative, interpretive research informed by design research and ethnographic sensibilities in the form of longitudinal field work. It draws on interviews, document analysis, and observations connected to a real-world medical drone initiative operating in an archipelago context. Rather than evaluating the system's performance (or promises of), the analysis attends to how

different actors (healthcare professionals, drone pilots, innovation leaders, technologists, and residents) make sense of the drone project and its implications.

We did this analysis in two rounds, the first following a classic thematic analysis [107] manner, with close attention to the data gathered, and using visual methods. The second brought a lens of reflexive thematic analysis [108]–[110] grounded in readings of matters of care [111].

The paper adopts a sociotechnical perspective, treating the drone as part of a broader network of regulations, infrastructures, weather conditions, professional practices, and imaginaries of innovation. Tensions are used as an analytical lens: instead of attempting to resolve contradictions, the paper holds them open as possible sites for reflection and considerations for the continuation or discontinuation of the region's attempt to implement drones in this context. This approach aligns with critical and reflective strands of HCI and STS, visibilising frictions rather support the perpetuation of adoption narratives.

2.4.3 Contribution

This paper contributes to HDI and HCI research by describing medical drone delivery as a matter of sociotechnical negotiation rather than technical optimisation. It surfaces situated key tensions in technological progress, including those between experimentation and care ethics, efficiency and redundancy, innovation and accountability, and global imaginaries of progress versus local lived conditions.

By embedding drones within healthcare infrastructures, the paper extends HDI beyond interaction moments to include institutional, environmental, and political dimensions. It argues that medical drones cannot be understood solely through their interfaces or autonomous capabilities, but must be examined in relation to how they reshape responsibilities, expectations, and forms of care.

The paper also contributes methodologically by demonstrating the value of tension-oriented reflexive thematic analysis in design research. Rather than producing design guidelines or policy recommendations, it offers a critical vocabulary for questioning how and why certain technological futures are made to appear desirable or inevitable. In doing so, it aligns with a broader research agenda that resists solutionism and calls for more reflexive engagements with emerging technologies in sensitive domains such as healthcare. This dissonance on the willingness to make space for drones but with large compromises became central to the work.

2.4.4 Post-Publication Reflection

Writing this paper marked a shift in how I understood my role as a design researcher working with drones. Unlike earlier work that focused on intimate or methodological encounters, this paper also required engaging with institutional narratives and infrastructural scales. Even at the level of our own research team, there was not full agreement on what could be understood from the field work. The archipelago became not just a setting, but an analytical device: one that made visible how technological promises travel, settle, and sometimes fracture when confronted with material and social realities.

What became clear during the writing process was how easily healthcare is mobilised as a moral shield for experimentation. The association with medical benefit often dampens critique, even when uncertainty, risk, and redistribution of labour are evident. This paper was an attempt to remain with that discomfort, rather than resolve it. A

remarkable facet of this project as opposed to much other research with drones is how it seems to almost entirely focus on the drone as a carrier, not as a surveiller¹². Because of that particular assignment, it seems it was somewhat easier to overlook all the other capacities of the drone, and lift only the job it is meant to fulfil.

At the time, I was inspired by Maurer and the idea of the “The Sensorium of the Drone” [112]: the suggestion that civilian drones reshape perception, aesthetics, and ideas of community. It argues that drones should be understood through the broader concept of the sensorium—a multisensory assemblage involving humans, machines, environments, and data systems. The book critiques earlier drone scholarship focused on the “scopic regime”, where drones are seen primarily as technologies of domination through vision, specially in a militarised context. Maurer explores how drones also operate through sound, movement, touch, thermal sensing, data processing, and networked interaction. From a post-human perspective, the drone is considered more than a camera in the sky, but also part of a human-machine assemblage that produces new sensory experiences and new forms of collective life. While Maurer does not present drones as inherently liberatory or oppressive, it is still acknowledged drone technologies carry risks of surveillance and exclusion, while also open possibilities for rethinking relations among humans, machines, animals, and environments. However, in “Drone Vision: Warfare, Surveillance, Protest” [113], Maurer writes:

“As the discussion about operative images already indicated, the primary sense of the drone is visual since unmanned aerial vehicles can produce mass quantities of images and seem to have hyper-visual powers. However, the visual sense is not the only one that drones have mastered. Besides drones with smell sensors and temperature feelers, there is also an auditive dimension. Drones can not only record sounds, they can make them too. They can exert terror by their endless humming while surveilling and circling target zones.” [113, p.137]

This sensorium became central not only as a part of what the drone does, but also what became evident in the interactions with drones. Our attunement to sensory ethnography Pink showed how many of the dimensions of sensory engagement by humans that are involved in the wrangling of the drone. This embodied contact between drone and human was mostly overlooked in the pilot project in the portrayal of a mostly automated system. In fact, as the project progressed, and the nurses became aware they would need to go outdoors to load the drone, the complicated network of control needed, their perception of how it would function seamlessly changed.

The work also sharpened my growing unease with inevitability narratives in HCI and HDI. Medical drones were repeatedly described as “the future”, even when their long-term integration, maintenance, appropriateness, and governance remained unclear. This observation directly informed the critique developed in Paper 4, where I more explicitly address how the field reproduces such imaginaries. In that sense, this paper functions as a bridge between my empirical work on drones and my later, more overtly political critique of HCI’s imagination practices.

¹²It seems this word does not exist, the correct would be surveyor. But I decided to keep it, as a technological actant in the task of surveillance.

2.5 Paper 4: Robots are Increasingly: Imagination Crisis in Human-Computer Interaction Research

In this critique, I argue that Human-Computer Interaction (HCI) research is currently experiencing a crisis of imagination. I contend that many researchers have become passive participants, serving the interests of capital rather than contributing to a post-capitalist imaginary. Through a tongue-in-cheek found poem, I call for a reimagining of HCI that pays attention to the inevitabilities it re-iterates in its argumentations; proposing that HCI researchers could unionise and find agreements to not portray research towards worlds we do not want to foreclose.

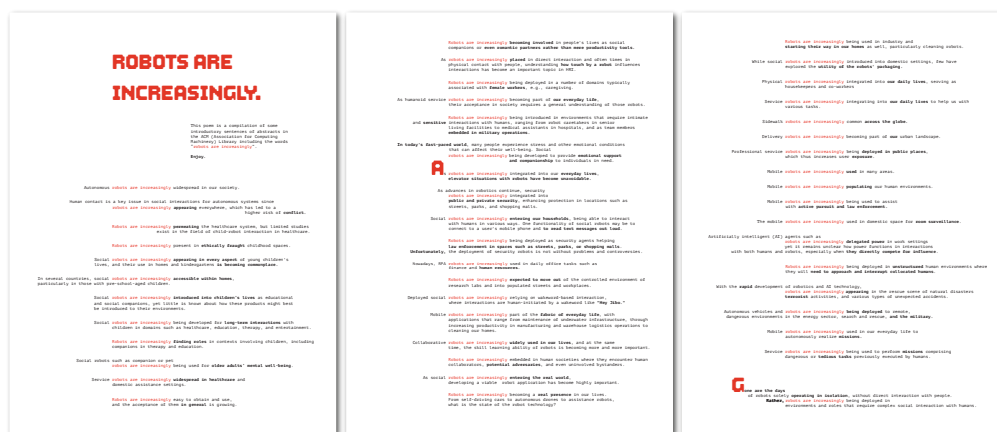


Figure 2.12: The found poem in this publication.

2.5.1 Problem

This critique is a child of frustration. Through the reading of hundreds of Human-Robot Interaction papers, I started noticing a rhetoric vice repeated at the start of each paper. I am certainly not the first one to note these world-setting divination tendencies. Dourish and Bell wrote a similar critique of ubiquitous computing research:

“Like those earlier technovisions, PARC’s technotales would also become myths: they would create a way to make sense of the future that appeared simultaneously magically but also manageably. That these myths emanated from the center of Silicon Valley gave them a sense of inevitability as well. After all, if smart engineers and computer scientists say this is our future, then surely it will be true. This kind of rhetorical positioning also meant that to be skeptical of such visions was to be seen as against progress, a Luddite¹³ or worse. And like all good myths, there would be heroes, seemingly impossible tasks, perils, pitfalls, and dangers, and of course, in the end, glory.’ [115, p.2]

To illustrate the issue, I decided to scrape the ACM Digital Library (the organisation where I publish the majority of my work) for sentences in either abstracts or introductions of papers, including the words “robots are increasingly”. I then compiled these

¹³Note here the pejorative and misleading framing of the Luddites, a group of resisters that we will come back to later.

into a three page long found poem. This poem, particularly when read out loud, has a tone of repetitive absurdity where the worlds portrayed are neither here (there are no robots everywhere), nor should they be (many of the robots would be harmful). Together with this poem, I show how in fact many of the robots used in the research have been de-funded or removed from the market. Conversely, I use the example of drones as a heavily popular robot that in fact, should perhaps not be as widespread as it is given its harmful effects.

2.5.2 Methodology

Many would resist to describe the approach in this paper as a method; rather it is an essay based on a somewhat artistic and provocative approach to the issue at hand. Curiously, it could be argued that the method itself could be replicated for many other technologies. Simply by replacing robots in “robots are increasingly”, one could find out what worlds are being portrayed (e.g.: “AI is increasingly”, “wearables are increasingly”, “mobile phones are increasingly”). In order to unpack this poem I refer to thinkers that had informed my anti-capitalist and anti-fascist sensibilities, including Mark Fisher and Dan McQuillan¹⁴. An ethical tension with this method worth marking is how the citations to these papers were handled. I decided to ultimately bundle them into a sequence rather than map them to each sentence as the point of the paper is not to point the finger individually, but to call to a collective issue.

2.5.3 Contribution

This paper contributes to HCI research by diagnosing a pervasive “imagination crisis” through a catchy (albeit somewhat petty) poetic technique¹⁵. I highlight how the field has become formulaic, instrumental, and narrowly tied to corporate and institutional agendas; even “in the small”. As mentioned, the critique introduces a poetic methodology as a mode of creative engagement in contemporary research. The paper concludes with a symbolic (or not!) call to unionise, encouraging the importance of collective reflection and action within the HCI community to counteract these entrenched patterns, suggesting that only through collaboration and shared critical awareness can the field reclaim its imaginative and transformative potential.

2.5.4 A Post-Publication Reflection: Drones Against

At the same conference, Barry Brown presented a paper called *Designing for War? Ethical and Practical Challenges to a Military HCI* [116], where he explores the uneasy intersection of human-computer interaction and the theatre of war. The paper examines three case studies where HCI has become deeply intertwined with military practices, highlighting the complexities and challenges that designers face in such contexts.

One of the cases is particularly curious, as it unpacks makerspaces as a seemingly beneficial and harmless place for the democratisation of design, that celebrate creativity, experimentation, and community-driven innovation. Yet, as Brown observes, these same spaces are also instrumentalised by military actors. The openness and technical

¹⁴This article was written partially during a PhD Course held by Anna Vallgård and Ylva Ferneaus, two brilliant contesting minds. The method of an essay always includes the voices of the others who supported and listened to it. I am grateful to Nadia Campo Woytuk, Sara Margrét Sigurðardóttir, Joo Young Park, and Andreas Lindegren. Particularly here, Joo Young with her ever critical sharp mind and feedback.

¹⁵Later, in section 3.4 I describe a sensibility called anarcho-poetic practices; and I would say this is one example of it.

resources of makerspaces make them appealing sites for prototyping technologies that may ultimately serve defence or even offensive operations, approximating military production to the civilian space. This duality, simultaneously a space for civilian creativity and military technological development, creates a moral and practical tension.

Another more relevant case to my work is the issue of AI and robotics, alongside the evolution of drone technology. For example, initially developed for civilian purposes such as photography, commercial drones have been adapted for military use. The paper discusses how the design of drone interfaces influences the decision-making process in military operations, emphasising the need for designers to consider the broader implications of their work. In short, Brown's point is that HCI should cease to ignore its entanglement with the military.

Drones, so often used as instruments of vertical control and distant violence in militarisation, have in fact a far more ambivalent character when taken up within artistic and activist practices. In the context of protest movements, borderlands, and experimental art scenes, these devices are repeatedly reappropriated as tools of counter-visibility, enabling what Zuev and Bratchford describes as a form of aerial *sousveillance*¹⁶ [117]. This paper gives an overview of the uses of drones and the new visibilities they allow, focusing on the democratisation of these views, and give examples of sensitive contexts. For instance, Keysar's work on '*who owns the sky*', traces a set of highly situated practices in which the airspace over Israel/Palestine is tactically engaged despite its strict militarisation. Focusing in particular on the work of groups such as *B'Tselem* and *Forensic Architecture*, alongside independent journalists and activists, the article details how commercially available drones are used to document events that would otherwise remain either inaccessible or tightly mediated by the Israeli military. For instance, drone footage of the Great March of Return along the Gaza border captures not only the scale of the protests but also the spatial organisation of violence: the positioning of Israeli snipers behind earth mounds, the dispersal of tear gas over crowds, and the distances maintained between bodies and the fence. Similarly, aerial recordings of the West Bank produced within investigative projects make visible the infrastructural logic of occupation—segregated road systems, settlement expansion, and the fragmentation of Palestinian land into discontinuous enclaves—images that circulate as evidentiary material in legal and advocacy contexts [118].

Yet, as Keysar points out, these practices do not quite restore a truthful or emancipated vision. The drone introduces a pronounced rupture between image and body: its remote operation produces a disembodied, stabilised gaze that abstracts lived experience. Even in the hands of activist groups, the resulting images echo the aesthetics of military surveillance. So in fact, and unfortunately, these aerial counter-images are caught within the same regimes of visibility they aim to challenge. What emerges is a fragile form of aerial resistance, in which organisations such as *B'Tselem* and *Forensic Architecture* exploit limited access to the sky to produce counter-evidence, while simultaneously draining energy to challenge the limits imposed by the very technologies and visual logics they appropriate [118].

This is echoed by Choi-Fitzpatrick, who assembles a series of concrete cases such as the ones above, in which small-scale drones are taken up by social movements as tools of witnessing and intervention: activists use them to document human rights abuses from

¹⁶Sousveillance is the practice of ordinary people recording or monitoring those in positions of power, such as police, companies, or governments, often using phones or wearable cameras. It's essentially "watching from below", the opposite of surveillance, which is monitoring carried out by authorities or organisations.

above, to estimate the size of protest crowds when official figures are contested, and to track environmental destruction or poaching in otherwise inaccessible terrains. But once again, the practices hinge on displacement of the body: the camera is lifted out of the human hand, producing a view that extends collective vision whilst simultaneously abstracting it. So ultimately, even a “good” use of drones, is a reworking of surveillance itself, where activist image-making both challenges and reproduces the same logics [119].

Within artistic practice, there are plenty of examples of uses of drones as counter reaction to surveillance practices or normative uses of drones¹⁷. For example, “*Drone Vision: Warfare, Surveillance, Protest*” [113] is an art-research project that examines how drones reshape power, visibility, and resistance. These cases show drones as a technology of contestation too. The questions of whose gaze is afforded the aerial space is troubled in familiar spaces to us: drones, such as those developed by KATSU¹⁸, make graffiti possible in unauthorised and otherwise inaccessible urban surfaces, provoking regimes of property, authorship, and surveillance into question. In a beautiful text, Casagrande¹⁹ moves through a series of grounded situations—from the presence of U.S. military drone infrastructures in Sicily, to police drones monitoring citizens during Covid-19 lockdowns in Italy, and the circulation of aerial images of mass graves and empty cities—to show how drone vision reorganises perception through distance and asymmetry. This article navigates the contrast between the estranging images of drones and first-hand accounts of flying a lightweight DJI and the wonder felt in that process. It shows a persistent disjunction in the separation between image and body, generating what the author describes as a hyper-sensory but ultimately simulated perception, in which space is rendered as both observable and uninhabitable. I could relate to this throughout my path, in the both appreciation and bodily rejection that rubbed against my hopes for the world as a less detached and detachable place.

While these may all seem to be focused on vision, Agostinho, Maurer and Veel shifts attention in their themed issue from drone vision to the broader sensorium in which drones operate, based on examples such as thermographic sensing, swarm technologies, and drone-based environmental monitoring to show how perception is distributed across cameras, sensors, data streams, and algorithms. This is where drones become a matter of post-humanism, where the human body but emerges through what they describe as a “more-than-optical” assemblage of human and non-human sensing [120]. To me, this reinforces the disjunctions mentioned above: drones do not only represent the distancing vision from the body, they seem to reorganise sensing altogether. This reorganisation is troublesome, and comes at heavy costs.

I wonder at times what would have happened if I had focused my studies on these resistive practices. In the spirit of hindsight is 20/20, perhaps it was to my advantage that I have followed a more normative path that consistently brushed against my own, so I could build my own sensibility to contestation by difference rather than agreement. It is the tension between what I thought was expected of me within the discipline of HCI (some techno-positivism, an open willingness to explore what drones can do in commercial terms, etc); and the recurrent resistance I found in my own work. For a long while I regretted not having understood earlier that I should have focused on these counter-practices against and with drones. But all of the examples examples described

¹⁷There is a quite interesting list of these projects here: <https://www.colorado.edu/iriss/society/unmanned-aircraft-systems-and-arts/unmanned-aircraft-systems-and-visual-arts>

¹⁸See: <https://dronecenter.bard.edu/katsu-graffiti-drone>

¹⁹<https://networkcultures.org/longform/2023/02/01/on-our-little-drones-senses-violence-and-the-space/>

above are still part of a narrative of ‘drones are increasingly’, whereas at the end of this chapter and paper I recognise a cycle of returning to question zero: do we need to perpetuate the narrative of the growing use of drones?

2.6 Concluding Drones

This chapter has brought together a set of papers that approach drones as a contested design material embedded in social and political relations rather than an inevitable technological future. The work presented here insists on slowing down, situating, and problematising human–drone relations through design research, critique, and alternative methodological commitments. Across the papers, a common thread is a refusal of dominant framings in HDI and HCI that assume progress as a singular unquestionable, and desirable endpoint.

In *Living with Drones, Robots, and Young Children*, autoethnography served as both method and intervention, discussing intimate, domestic, and ethically complex encounters that were absent from the literature on drones. In that work, I attempted to destabilise distinctions (such as user and bystander) collapsed in an example of lived experiences, and how design research can surface these fractures through first-person engagements.

Conversational Composites extends this commitment to situated and plural ways of knowing by proposing a visual, layered method for analysis and dialogue. Designerly practices (also grounded in architectural sensibilities) are not positioned as supplementary to research, but as epistemic tools²⁰ in their own right: capable of ambiguity, facilitating collaboration, and making visible the interpretive work that often remains implicit. The method is an example of approaches that resist textual dominance and instead engage with materiality, temporality, and collective sense-making. It made space for my alternative approach to drones to begin to surface, showing how I consistently layered every piece of data with a post-human and/or resistive reading.

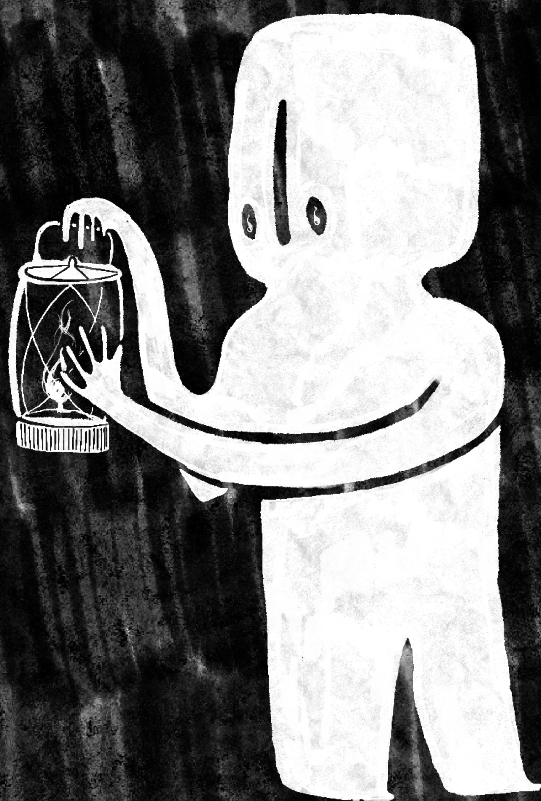
The later papers push this critique further into infrastructural and disciplinary territories. *Drones in the Archipelago* situates drone technology within geographically and politically specific contexts, revealing how narratives of technological progress obscure tensions, exclusions, and uneven consequences, once again prioritising a view of progress that is not necessarily agreed upon. *Robots are Increasingly* turns the critical lens back into the research field, questioning how HCI itself participates in foreclosing alternative futures through repetitive, unexamined rhetoric of inevitability. This critique argues that the problem is not only what drones do in the world, but how research communities imagine, legitimise, and reproduce particular worlds through their written work.

This chapter contributes a set of perspectives that challenge the assumption that drones must become more autonomous, more social, or even more pervasive. Instead, it positions design research as a practice of refusal, re-imagination, and careful reconsideration. By combining a design orientation with autoethnography, visual methods, infrastructural analysis/critique, and poetic provocation, the chapter focused on how design knowledge can continue to support moving beyond optimisation and prediction toward a more reflective, politically aware, and ethically grounded engagement with drones in society.

The work compiled here argues that the role of interaction designers and HCI researchers is not to smooth the path toward predefined technological futures, but to remain attentive to the values, assumptions, and power relations that such futures entail—it means that designers also carry a sensibility towards questioning and critiquing

²⁰Epistemic tools are things used to think with such as sketches, prototypes, diagrams, interviews, or data models that co-constitute knowledge rather than just represent it. Examples of epistemic tools include the Large Hadron Collider, thermometers, rulers, computers, pen and paper, a tarot deck, etc.

alongside their making. Of course, such an attentiveness has implications on how research projects are described. Because design has often de-politicised, many may feel it is inappropriate or not recommended to attend to their own stances. My own thesis progressed from attempting to live with drones to ultimately not wanting to live with them at all. In doing so, it opens space for alternative imaginaries: ones in which drones (and technology) are not taken for granted and research itself becomes a site of collective responsibility and resistance in what narratives are perpetuated.



Chapter 3

Design Sensibilities

3.1 From Designerly Ways of Knowing to Corporeal Theories

Through all the previous work, it became evident to me that the understanding I had of the beneficial role of design was somewhat misinformed. This was not an easy realisation, it was in the inner conflict and the frictions the work described in the previous chapter that I found the seed to question my own assumptions of what design knowledge were. While I had been certainly optimistic in the power of design as a tool for change, as the work progressed, I found a disillusionment in the collision with ongoing politics, infrastructures, and lived realities of drone use I studied. As mentioned above in Section 1.4, design is distinctive in its capacity to connect theory and practice through artefacts and processes, allowing it to occupy a space that makes worlds possible and tangible. In fact, perhaps design itself is somewhat ‘wicked’.

Rather than trying to reduce those factors of wickedness, my work intentionally remains with it, aligning with Haraway’s call to ‘stay with the trouble’ [121]. My position as a designer is shaped by my background in architecture: a field in which artistic, poetic, and experiential modes of thinking are valued forms of practice. Within that training, lived sensory experiences become a foundation for design knowledge. Such experiences travel with the designer and are re-articulated through new work over time. Similar processes occur across design disciplines, though often less explicitly. Without fully perceiving it initially, I carried these ideas forward throughout the work described above with drones—although this came with frictions as this type of work has not traditionally been valued within HCI. Many of the researchers I cite in this thesis [e.g.: 49], [122]–[124] have been active in changing this direction and opening up forms of knowledge that match a designerly way of knowing.

This initial miss in realising how architecture still coloured my research is surprising, given the work of Schön had been so influential to me. The notion of *reflective practice in action* [125], describes reflexivity as a central mechanism for learning within practice-based disciplines. Schön argues that practical experience alone does not automatically lead to knowledge. Instead, knowledge is constructed through deliberate reflection on and within experience. He distinguishes between two modes of reflection: *reflection-on-action*, which involves retrospective consideration of past actions in order to assess alternative possibilities, and *reflection-in-action*, which takes place during the act of designing itself, drawing on experience and judgement to inform ongoing decisions. The latter depends on improvisation alongside a continuous critical stance. Reflective practice is therefore central to the development of design competence, as it enables

practitioners to learn from experience and act with greater intentionality. Schön's contributions to design epistemology, particularly his discussion of the tension between *technical knowledge* and *artistry*, maintain their importance. Many of his ideas were derived from studies of architectural practice, and his critique of higher education resonates strongly with my own experience.

Schön contended that higher education institutions often fail to equip practitioners for the uncertainty and emergence inherent in practice. He advocated instead for the education of reflective practitioners, rather than allowing technical rationalist thinking to dominate. His work expresses a clear scepticism towards positivism, placing emphasis on lived experience as a source of knowledge. Reflective engagement with design practice thus represents one approach to bridging tacit and explicit forms of knowledge. Design, in this view, is not primarily concerned with what is true in a universal or generalisable sense, such as statistical knowledge derived from controlled experiments, but rather with what is pragmatic, including situated, contextual, and temporal understandings [51], [126].

Such a perspective clashes with certain understandings of the transferability of knowledge. Back to the issue of assuming *designerly ways of knowing* have an intuitive or natural component, it seems difficult to consider that whatever forms of knowledge stemming from reflexive practice can be explained to others lacking the lived experience (or at least similar) that grounded it. One way of creating spaces to be within is through a deeper entanglement between theory and practice allowing for the explicit articulation of what ways of knowing are possible or expected to be developed. Arguably, this can be explained and discussed within adequately defined theoretical spaces for reflection in the form of design programs and intermediate level knowledge.

This reflection is only possible in the space between practice and theory. For example, in my case, the designerly ways of knowing were so embedded that they constantly mismatched with what my encounters with drones came to be. Particularly when working on designing interactions with them, I found time and time again that it was incredibly difficult to approach them in a manner that made sense to design practice as I imagined it. In a paper still championing for design knowledge in HDI, I noted on how low-fidelity prototyping might be near useless for developing drone technology [12]. Drones have such a complex engineering nature, that any small change might render them unusable. While many of my colleagues have done incredibly interesting things with them (see, for example, [78], [127], [128]), the truth is that the poetic and playful nature of my practice was rather incompatible with the technology. Of course one can say this is not exclusive to drones, but what awoke the reflections that follow was not my lack of ability to understand the technology—it was rather the recurring willingness to engage with a technology that showed such fragile ability to become truly democratic, requiring such levels of industrial production that they became utterly unappealing from my designerly stance. This unwillingness became so embodied that I still can hardly be co-located with a drone without being annoyed.

3.1.1 Design Programs

The bridging between the designer and abstract theories is at the core of this thesis. One of the steps in-between is the idea of design programs. Redström's book *Making Design Theory* explicitly explores the idea that design practice can itself be a form of theory making. As Redström writes, "*exploring the idea that as design research engages in making many different kinds of things, theory might well be one of those things it is—or could be—making. And so the question is, what design theory could be made in*

research-through-design?” [129, p.1]. The process of theory making in design, however, differs from that of other disciplines. Two arguments from this work are particularly relevant here. The first concerns the distinction between *definition* and *proposition*, highlighting the transitional character of design theory:

“Consider completely letting go of the idea that what we offer are different definitions of what design is, and instead just refer to them as different propositions. Would that help? It would certainly cast the idea of ‘unified theory’ in a different light, as an ambition to achieve ‘unified propositions’ sounds far less exciting. At the same time, however, it certainly feels as if something more is at stake here. Consider a more concrete definition made through design: having created this object for you to sit on, I can, of course, *present* it by saying, ‘I’d like to *propose* that this is a chair,’ but this is not quite the same as to say, ‘This *is* a chair.’” [129, p.138]

Throughout architecture school, a common mantra that many will recognise is that good design will ‘speak for itself’. In short, if a student is successful, their presentation will need very little introduction and framing, as the designed object will be able to do the explanatory work for them. This seems quite a reasonable expectation for design and architecture, given the maker will not always be present to explain to whomever is encountering the outcome what it is meant to represent.

The second argument relates to the artefact as a vehicle for knowledge:

“When our objective is to uncover and articulate the general, the exception becomes a problem, a disturbance or nuisance. In statistical analysis, for instance, extreme outliers are more likely to be considered extraneous experimental errors than actual data. Indeed, when studying what is, what is created during the process of observation is often considered a problem—and thus the notion of ‘artifact’ is used, along with other notions such as noise, to denote errors stemming from the experimental setup. When we turn to the artificial, to the artifact not as error but as intention, the issue of exception is also reversed.” [129, p.140]

This looking at the margins is at the core of design—one could say the margins are at the centre. This idea is reinforced for example by Gaver, Krogh, Boucher *et al.*’s argument in embracing and capturing emergence as a fundamental feature of design research¹. One of their strategies explicitly mentions how important it is to “seek idiosyncratic examples of design settings” [123]. An idiosyncrasy is a unique, peculiar, or eccentric habit, mannerism, or behavioural trait specific to an individual or a machine or system, which for generalisation purposes is a nuisance. But for design, this is key to creative practice. One could argue that conversely, design programs do set an ontology for research that will constrain what can be constructed, and similarly, as explained by reflexive thematic analysis [108], one can hardly ever claim that any research results ever really emerge—rather they are co-constructed. But because design artifacts live their own lives, and design knowledge is experimental not predictive, even if there is clear intent at the start, the contingencies of making and theorising will strongly influence outcomes.

¹This is probably one of my favourite papers ever written in the space of allowing design research to flourish. Not only does it give advice on how to conduct the work but also how to report on it, telling the full story, seeking inspiration from different literary genres, the importance of narrative, and being tolerant of changing directions.

The oscillation between artifacts and theory with considerations to emergence and situatedness creates borderlands where there is hesitation on what makes valid contributions to academic research. While a practitioner may overlook the need for knowledge transferability, for a researcher, the craft of knowledge sharing is key. But staying with the notion that produced knowledge is provisional, contingent, and aspirational [130], the idea of *Intermediate Level Knowledge* is proposed [51]. As Höök and Löwgren articulate, intermediate level knowledge “*is more abstracted than particular instances, yet does not aspire to the generality of a theory*” [131]. Beyond guidelines, patterns, methods, and other tools; a common approach to the creation of this abstraction is Gaver and Bowers’s *Annotated Portfolios* where visual explanations are paired with reasoning and reflections by the designers [68], [132], [133]. Another example is Höök and Löwgren’s *Strong Concepts* which focuses on the expression of abstract ideas that can be appropriated by other designers in a generative manner [131]. However, these forms of knowledge transmission still seemed to lack something for me—in particular the role of the designer’s conceptual placement [28] and the influence of emergence and corporeality in their proposition. This chapter is dedicated to probing out other forms of intermediate level knowledge in this framing.

3.1.2 Knowledge at the Margins and Phenomenology

Understanding interaction design as an epistemological position within HCI inevitably brings it into dialogue with phenomenology, particularly through the concept of embodiment [134], [135]. While a detailed philosophical discussion lies beyond the scope of this work, it is important to state that the research presented here is closely aligned with Merleau-Ponty’s phenomenology of the *lived body* [136]. Interaction design is fundamentally concerned with experience [137], and in this context the embodied experience of designing itself becomes a meaningful contribution to design theory. Merleau-Ponty’s work has been highly influential within HCI, particularly in its rejection of Cartesian dualism and its insistence on a unified understanding of mind and body.

Within HCI, Svanæs develops the notion of embodiment by describing the importance of designers’ first-person experiences with artefacts, both as objects of reflection and as part of the ongoing design process. As he observes, “*valuable theoretical contributions can result from reflections that do not originate from a ‘scientific’ basis of hard data. In the present context, the value of the theoretical contributions must be judged by their applicability to real problems, and by the extent to which they have explanatory power and provide inspirations for design.*” [138, p.8:27]

Much of my work at the start of this doctoral degree was influenced by Soma Design [139]: a design program framed by phenomenology, which relies on subjective knowledge and favours the ‘felt dimension’ of experiences. It is informed by a philosophy of somaesthetics (where the division of body and mind is rejected and re-defined as the soma—the living, sentient, purposive body). Within soma design, anyone involved in the process of designing or using interactive ‘things’ is expected to cultivate their sense of (soma)aesthetic appreciation [140]. Therefore, it is central to this design program to engage in movement, feeling, and in curiously exploring the connections between our soma, the world, and others. Teaching soma design [141] exhibits dimensions of temporal considerations, involving exercises that vary from slow to fast, contradicting much of what is favoured in many trends of design thinking towards efficiency and agility. Soma design does not try to generalise experience, instead focusing on the pluralism of bodies [95] and how well documented experiences can contribute to a generative collective understanding of what designs are desirable. There are a number of methods habitual

within this program, one example being body maps [142]: a technique for discussing bodily experiences through drawing them on a piece of paper prepared with prompts and the outline of a human body. Another common method is expert interviews with somatic connoisseurs [143]: people with in-depth knowledge of a bodily practice. First-person methods are also favoured and embraced [124]. It is also common to attempt to disrupt habitual [144] through defamiliarisation methods [145] and estrangement [146].

This initial soma design framing has evolved from direct engagements with the body and introspection towards a re-thinking of the entanglement between theory and practice. The practices involved in this design program encompass a turn to *noticing*. In design research and practice, “noticing” is understood as a disciplined, embodied and reflective mode of attention that enables designers and researchers to perceive meaningful aspects of a context, situation, theory, context or interaction that might otherwise be overlooked within everyday experience. It is beyond a passive act of seeing: noticing involves intentional focus, interpretation and sensitivity to phenomena [147], [148]. My work on sensibilities, while somewhat aligned with ideas of attunement and noticing, puts instead the limelight on the becoming processes that are entangled with both theory and practice. This is where I often make a distinction between a sensitivity and a sensibility: sensitivity can be understood as how easily someone is affected or responds to emotional, physical, or social stimuli (for example, being easily hurt by criticism or physically reacting to light or touch), whereas sensibility refers to a more refined capacity for perception, judgment, and appreciation, especially in relation to emotions, morality, or aesthetics. Sensitivity is about being affected while sensibility considers a space to act, an ability to sense and respond.

The papers in this chapter trace that journey from an attentiveness to the body to an explicit entanglement between theoretical re-framings and lived realities through forms of noticing that become unavoidable. That overlap is what I call corporeal theories.

3.1.3 Corporeal Theory

I use the term *corporeal theory*² to describe how theoretical commitments sediment into embodied sensibilities, shaping how designers attend to, endure, and make sense of lived experience which ultimately becomes embedded in their work. The complete blurring of the split between theory and practice means the stack between ontology, epistemology, and methodology is entirely traversed by the body of the designer.

The arrival at the preliminary proposal of corporeal theories is at best tentative. At the writing of this thesis, I am not yet fully sure what I mean with it—but I find it worthy of opening³. The idea of theories that sit within the body, that are part of the ways in which we experience the world is bigger than just sensibilities. It could be argued that sensibilities could be compared to the idea of values—which I connect to Value-Sensitive Design, a design methodology that aims to systematically incorporate human values into the design of technology. Instead of focusing only on functionality or efficiency, VSD explicitly considers ethical and social values (e.g., privacy, trust, fairness, autonomy) throughout the design process (see e.g., [149]). Potentially, values could

²To specify, I call this corporeal theory and not corporeal knowledge as all knowledge is corporeal, there is no knowing outside the body. Even post-human knowing has a material infrastructure. Theories, however, are often perceived as detached from bodies, even though theories materially exist in, for example, books and oral traditions.

³When you are writing your thesis (and many of my colleagues will agree) you are often reminded this is not the end of your work. Often the metaphor of a driving licence is used which is quite ironic in my case since I do not have one. But in short, in this thesis I have purposefully made space for work-in-progress, rather than just allowing sedimented thoughts in, to open up for further conversations moving on.

be seen as a type of corporeal theory, although they are quite distinct from design sensibilities. Values can be stated and should be lived, but they have a future orientation, an ideological one—they can arguably be ignored or easily re-oriented. Sensibilities are deeply sedimented even if in constant change, they are unavoidable and part of us. I could establish more distinctions but what matters here is that both can be examples of corporeal theories⁴.

This thesis is concerned with *becoming* a designer through all the labour of research—not only what is produced but what processes it goes through. This becoming is seen as a form of articulable, shareable, and potentially collective knowledge. Through a set of three papers I trace the journey from embedding a theory (new materialism) into the analysis of an autoethnography through an accepted form of intermediate level knowledge (an annotated portfolio), towards using another theory and its appended methods (psychogeography and *dérive*) as a way of opening a design space, and finally in a retrospective drift, the description of a new suggested form of intermediate level knowledge in the form of design sensibilities.

This journey itself exemplifies what is meant with corporeal theory: a becoming—with the work we do, treating theory as a design material like any other. Because theories are at the core of design programs, I posit that each program will have particular effects in the lives of the researchers that observe them. The call is to consider how theory lives in bodies, and how these (and whose) bodies participate actively in the making of things.

⁴This discussion surfaced while discussing my work at Copenhagen University after a kind invitation from Kasper Hornbæk. I am grateful for his openness and questions.

3.2 Paper 5: My Body, My Baby, and Everything Else: An Autoethnographic Illustrated Portfolio of Intra-Actions in Pregnancy and Childbirth

This pictorial presents an annotated portfolio of intra-actions in the space of my third pregnancy. It is informed by theories of new materialism and matters of care, turned into an issue for the design of technologies for pregnancy. This is, in its vulnerable position, the publication I am most proud of in this thesis. It has opened conversations (many have told me they have read this paper whenever I meet them in person) that mark a path forward I intend to follow on the investigation of what sensibilities are and should be at play in the design for perinatal care.

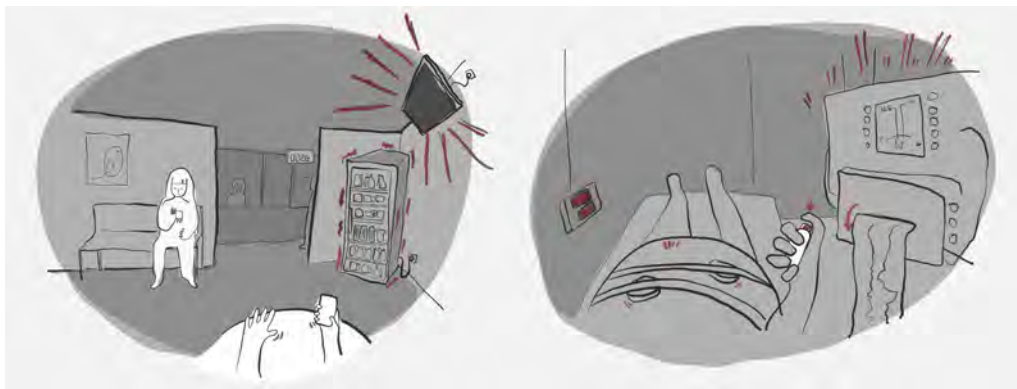


Figure 3.1: Two illustrations from this pictorial paired with vignettes that explain in detail what those interactions meant to the boundaries between me, my baby, and everything else around us.

3.2.1 Problem

The attunement to phenomenology, alongside practices within soma design, eventually led to a certain (albeit temporary) focus on the documentation of my lived experiences. During the auto-ethnographic study conducted with my children presented in section 2.2, I got pregnant with our third child. As noted, this meant the end of the previous study with drones, but also entailed a possibility for me to explore an intimate topic through a slightly different analysis than what was used in the previous paper.

During this period of time, I had developed routines of journaling and systematic documentation of my experiences. While the previous paper does not include the pregnancy, I had taken care in keeping those first-person reflexive practices happening in parallel. It could be argued that the previous paper lacks in rigour because it omits the pregnancy; but in every narrative, compromises and judgements are made on what to include and exclude.

In the period between each of these papers, I had been recommended the work of Barad [150]. That reading changed my perspective on interactions so dramatically that I was compelled to properly describe that effect. At the time, I realised how the reading changed not only the analysis of things, but even my lived experience of this third pregnancy. My attunement and attention to the boundaries between bodies and agencies, and how the corporeal making of my baby was constantly renegotiated through technology. Although I was sceptical of using the journals I had kept on such an intimate topic and turning them into an open-source publication, I ended up deciding that the

lack of research in pregnancy at this level within HCI made it worthwhile to share some of these reflexive re-interpretations.

Pregnancy and childbirth are profoundly transitional and embodied experiences, yet within HCI, they are often approached through a somewhat technocratic, solutionist, or third-person perspectives. Existing research has explored related technologies such as mobile applications, online communities, and medical devices, but detailed first-person accounts of how digital technologies intra-act with bodies, emotions, and care practices during pregnancy and birth were absent. Such an omission risks neglecting the subtle, ethical, and affective dimensions of socio-technical assemblages in these moments of vulnerability, particularly how design decisions shape material meaning in lived experience.

Hence this paper does not directly investigate a problem, but rather occupies a space of opportunity in the absence of other in-depth first-person methods applied by pregnant people within our field.

3.2.2 Methodology

This pictorial captures an auto-ethnographic study of my third pregnancy, childbirth, and post-partum period in Sweden, spanning April 2021 to January 2022. Grounded in agential realism [150], I used illustrated and annotated vignettes to trace intra-actions between my body, my unborn child, digital technologies, medical infrastructures, and other human and non-human agents. Drawing on annotated portfolios as both an analytical and communicative method [68], [151], I analysed diaries, photographs (see for example figure 3.2), videos, and illustrations to identify agential cuts across moments such as pregnancy testing, genetic screening, ultrasounds, foetal monitoring, and childbirth. This diffractive approach treats lived experience as design material, enabling reflection on care, responsibility, and performativity in socio-technical assemblages [152].



Figure 3.2: Two annotated images from the pictorial.

3.2.3 Contribution

This paper contributes with a form of intermediate level knowledge—an illustrated auto-ethnographic portfolio that surfaces neglected intra-actions with digital technology during pregnancy and childbirth. I articulated three interrelated dimensions of care that repeatedly emerge across the portfolio: *material memoirs*, *tempo*, and *correspondence*. By framing these experiences as matters of care rather than matters of fact [111],

I demonstrate how annotated portfolios of intra-actions can function as a feminist, fourth-wave HCI method [6]. I conclude by inviting other HCI and TEI (Tangible, Embedded, and Embodied Interaction) researchers to share their own first-person, illustrated accounts of socio-technical assemblages around fertility, pregnancy, and childbirth, positioning such work as a necessary step towards more attuned, caring, reflective, and responsible design practices in this space.

3.2.4 A Post-Publication Reflection

In the months following the publication of this pictorial, I came to understand that its most significant outcome was not contained within the pages of the paper itself, but rather in the conversations it enabled⁵. What I initially framed as an auto-ethnographic and illustrated account of intra-actions in pregnancy and childbirth became, in practice, a site of theoretical exchange. Colleagues, students, and strangers approached me not only to discuss pregnancy technologies, but to speak—through their own lived experiences—about bodies, care, theory, and the difficulty of living with concepts that should not remain abstract.

What surprised me most was how often these conversations turned towards theory—as something felt, inhabited, and negotiated. I became often self-conscious of the probable misreading of Barad I had done. Readers recognised agential realism, feminist technoscience, and care ethics as theories with practical consequences that could be sensed in the illustrations, the narratives, and the frictions I described from a design perspective. The pictorial seemed to offer permission to encounter theory corporeally: through fatigue, touch, waiting, fear, relief, and attachment. The work functioned less as an application of theory and more as an exposure of how theory had already been shaping how I noticed, interpreted, and retold my own experiences.

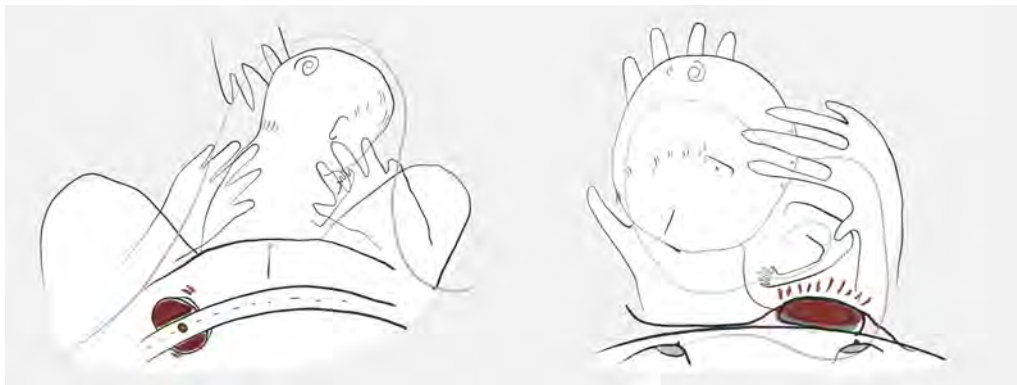


Figure 3.3: An example from the pictorial on how a Bluetooth technology (CTG) came between me and my baby in the very first second of his life.

This realisation marked a first step for me towards articulating what I now tentatively think of as *design sensibilities as a corporeal theory*. Throughout the process of making the pictorial, I was not merely using theoretical concepts to analyse experience after the fact; rather, those concepts had become inseparable from how I lived the events themselves. My attunement to tempo, correspondence, material memoirs, and agential

⁵This work was presented at TEI where I understood the support it required to get it published. There, I also met friends and collaborators that are dear to me, including Alice Haynes, Courtney Reed, Fiona Bell, Karen Cochrane, Dean Brown, and others. Some of these women became the core of an emotional support coven filled with lovely caring witches (hags) and I thank all of them.

cuts was not only analytical—it became embodied and lived. Theory had sedimented into sensibility. It shaped where I lingered, what disturbed me (see for example figure 3.3), what I resisted, and what I came to care for.

In retrospect, the pictorial can be read as documenting a mutual becoming: as pregnancy and childbirth reconfigured my body, so did relationships, vulnerabilities, and theory simultaneously shaped how I attended to those changes. This entanglement complicates any clean distinction between theory and method, or between reflection and experience. Theoretical commitments were not external lenses but part of the assemblage itself, co-producing what was possible to feel, notice, and later narrate or unpack.

These exchanges and conversations on the topic of this publication affirmed for me that making theory visible as lived and corporeal is not a weakening of rigour, but a different ethical and epistemic stance. It revealed a certain responsibility for how concepts travel, how they shape sensibilities, and how they participate in who we become. I now see this pictorial as an opening rather than a conclusion: an initial articulation of how design research might acknowledge theory not only as something we use, but as something we live with. If design sensibilities are cultivated over time through repeated intra-actions with materials, bodies, and ideas, then they are necessarily processes that involve everything that is ourselves, embedding theory in our lives. In the case of this pictorial, the corporeal aspects are particularly strong, as my attunement to technologies in this process most definitely also guided the choices I made during my pregnancy. But even if the link is not always as clear, this is the first publication where I fully acknowledged the profoundly blurred boundaries between my body (perhaps better said; my soma—including biological realities, movements, emotions, and thoughts) and my designerly ways of knowing.

3.3 Paper 6: In Praise of Shadows: Sensibility and Somaesthetic Appreciation for Shadows in Interaction Design

Light has long occupied a privileged position in interaction design, and this paper began with a turn in attention to the inevitability of shadows. Shadows, so often treated as secondary effects or visual noise in interaction design, were brought to the limelight as experiential, material, and poetic phenomena. Inspired by Jun'ichirō Tanizaki's *In Praise of Shadows*, the work resists dominant design values of clarity, brightness, and control, and instead turns towards subtlety, ambiguity, and the slow unfolding of learning how to perceive. In doing so, it positions the sensibility as a central concern for interaction design research.

The paper is grounded in an understanding of interaction as lived experience [137], and in phenomenological accounts of the body as the site through which meaning emerges [136]. From this perspective, shadows are not simply visual artefacts, but relational events that arise through the entanglement of bodies, light, materials, time, and movement. Attending to shadows becomes a way of learning how to attend more carefully to interaction itself. The article uses a particular journey of creating a prototype of a table [153].

3.3.1 Problem

Interaction design has developed rich vocabularies for describing usability, functionality, and engagement, yet it continues to struggle with experiential qualities that resist stabilisation. Atmosphere, mood, and peripheral perception are difficult to articulate, despite their importance in shaping how interactions are felt and remembered. Shadows exemplify this tension. They are ubiquitous, yet rarely treated as intentional design material or as contributors to meaning.

The problem addressed in this paper is therefore epistemological as much as it is practical or practice-oriented. How can interaction design account for forms of knowing that are grounded in sensibility, in bodily attunement, and in the cultivation of attention⁶? What is lost when design practice prioritises what can be made explicit over what must be felt? By focusing on shadows through a poetic dimension, the paper challenges instrumental approaches to interaction and asks how designers might learn to stay with subtle, fleeting, and ambiguous experiences.

3.3.2 Methodology

The paper adopts a research-through-design approach with an explicit and intentional leaning on the development of particular design sensibility. Hence it does not rely on a predefined design problem: the work unfolded through a process of learning how to notice shadows and how they can be understood as a material for interaction. This process is explicitly described as somaesthetic appreciation, understood here as the cultivation of bodily awareness through practice.

Three intertwined activities structure the work:

First, Tanizaki's text provides a conceptual and aesthetic grounding, offering a language for valuing darkness, patina, and indirect perception. We summarised these in themes and created a small booklet for them.

Second, a *dérive*-inspired [154] practice of walking and observation invites designers (together!) to attend to shadows encountered in everyday environments. These

⁶The differences between attunement and sensibilities are discussed in the next paper.

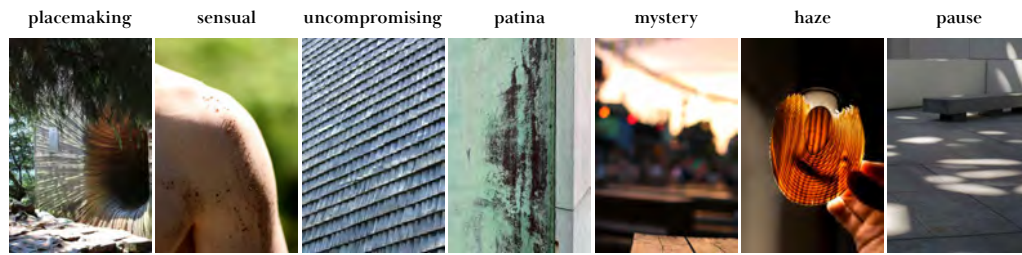


Figure 3.4: The themes constructed from the book “In Praise of Shadows”.

observations are documented through photographs, notes, and reflections as a way of training attention. This *dérive*-based, aesthetic methodology understands perception as temporal, situated, and corporeal, aligning with research-through-design traditions that treat experience itself as a site of knowledge production [68], [155].

Third, these sensibilities are materialised through a series of concepts and exploratory prototypes centred on tables and their shadows. These artefacts were oriented towards creating situations in which shadows stretch, soften, fade, or invite bodily movement. Through engaging with these prototypes, the we reflected on how interaction unfolds over time, how shadows guide attention, and how meaning emerges through embodied engagement.

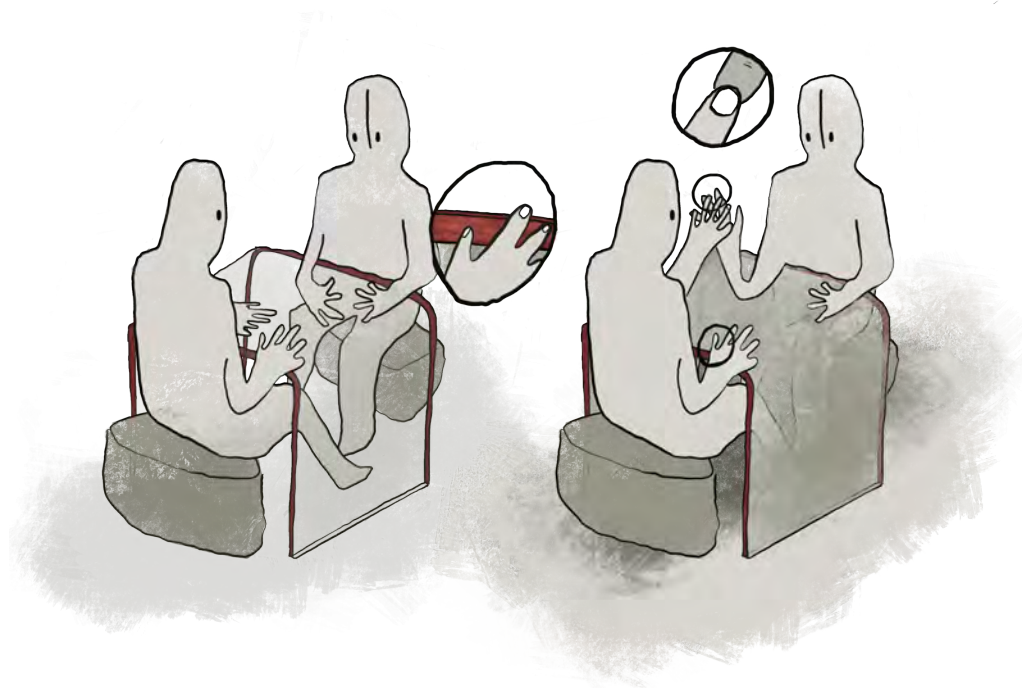


Figure 3.5: An illustration of the flirting table concept that we later turned into the undertable.

One of these artefacts, the undertable, became particularly significant. In this paper, it is presented as part of a broader exploration of shadows as interaction material. The undertable was later developed and discussed in a companion paper, where its design, use, and experiential qualities are examined in more detail [153]⁷. This paper therefore

⁷I will forever be grateful to Sjoerd Hendriks for the lessons learned throughout our collaboration.



Figure 3.6: Images of the undertable prototype.

focused less on the artefact as an outcome, and more on the sensibilities that made its design possible.

3.3.3 Contribution

This paper contributes to interaction design by articulating sensibility as a cultivable design capacity. Rather than framing design knowledge in terms of universally applied methods or frameworks, it reveals the importance of the gradual development of aesthetic judgement through embodied practice. Shadows are used as a lens through which this process becomes possible to articulate and share.

First, the paper reframes shadows as a legitimate design material, extending existing discussions of materiality in HCI to include ephemeral and relational phenomena. Shadows are shown to operate across physical and digital domains, leaving traces in patina, temperature, and movement, and challenging assumptions of perfect representation.

Second, the work demonstrates how research-through-design can be used to cultivate sensibility as a knowledge contribution. The prototypes were designed with that sensibility at hand, and function as invitations to attend, linger, and reflect, supporting a form of inquiry that values openness and experiential richness. This positions sensibility outside of a personal closed loop and as a shared and communicable aspect of design practice.

This paper contributes a definition of design sensibility as an intermediate level of knowledge that is sparked, fostered, and eventually embedded through repeated aesthetic and bodily engagement. Drawing on Tanizaki's *In Praise of Shadows*, we frame sensibilities not only as tacit expertise, but as a poetic and cultural inheritance that risks being lost if it is not actively maintained in collaboration. We portray sensibilities as heirlooms: they are passed on through practice rather than instruction, require care to endure, and carry with them values that shape how technologies come into being. This idea has similarities with how craft practice is seen as not just instructions, but shared spaces in co-presence⁸, which can certainly be equally seen in maker-spaces, collaborative coding, or in protest. By articulating sensibilities in this way, the paper positions interaction designers not only as creators of new artefacts, but as stewards responsible

⁸For example, Rosner examined the tension between craft as an embodied, relational inheritance and the increasing digitisation of making practices. She argued that textile knowledge often functions as a form of heirloom transmission—passed through shared labour, tacit gestures, and intergenerational intimacy—and that efforts to document or formalise such practices can unsettle the social relations through which craft acquires meaning: “The relative invisibility of knitting labor enables a sense of ‘cleverness’ or ‘secret society’ that digital technologies (blogs, pod casts, social networking sites sometimes threaten to unravel by exposing additional traces of craft production.” [156]

for preserving and carrying forward aesthetic qualities (at times even immaterial, poetic, or neglected ones) within research-through-design in a collaborative manner.

Finally, by situating the Undertable as both an outcome and process of joined articulation, as well as a starting point for deeper exploration elsewhere, the paper shows how design artefacts are embedded and active agents in the development and articulation of sensibilities. The Undertable is an interactive artifact where two people sitting across a table need to touch each other to activate a set of fans under the table (as well as a light that was added later to better signify the switch). The experience replicates an interactive experience called the ‘Mediated Body’ by Hoby and Löwgren[157], building on his theory of Homo Explorens [158] which was, in its turn, inspired by Homo Ludens [159] which Gaver had instanced in a number of prototypes.

The Undertable created a space to touch others in unfamiliar ways, through bare skin, by turning attention to the space beneath the table—where shadows gather, movements slow, and bodies are compelled to bend, crouch, or reach through. The artifact itself is a representation of how sensibilities are learned through unfamiliar bodily repositioning towards the object itself and others with clear connections also to theoretical work that follows the same heirloom premises as sensibilities themselves.

3.3.4 A Post-Publication Reflection

The impact of this article was, purposefully, less about the interactive table or the specific treatment of shadows, and more about how it legitimised a particular way of attending to the world. Conversations with peers frequently moved towards discussions of perception, sensibility, and the difficulty of articulating what it means to learn to notice differently. Shadows became a shared point of entry into broader reflections on how design knowledge is cultivated through bodies, movement, and prolonged exposure. This exposure happens through and by design, by exploring the movement through the manipulation of the material into form.

The method of the *dérive* itself leans on the same premises that sensibilities do: something that can be practised, trained, and slowly embedded through lived experience. This shared intentionality is meaningful as a relational doing of becoming designers. The act of walking, looking, photographing, and lingering with tables and their shadows informed how knowledge emerged through repetition, boredom, surprise, and bodily presence together. These exchanges made clear that the work was often read beyond the exploration of shadows as a material, towards an articulation of how theory and attention co-evolve in practice.

This article marked my first explicit attempt to grasp design sensibilities as a form of corporeal theory. While the paper frames sensibility as a skill that can be sparked and fostered, the process of developing that sensibility revealed something more entangled: even in the form of an inspirational reading that is not necessarily theoretical in a classic sense, it shaped how we oriented ourselves while walking, where we paused, what we photographed, and which phenomena became meaningful. Concepts drawn from somaesthetics, phenomenology, and poetic engagement with materiality were not suspended as detached conclusions or concepts; they became lived dispositions.

The focus on shadows was metaphorically instructive in this regard. Shadows are not compatible with stable representation, they demand attunement to light, time, and position, and require the body to move in order to be perceived. Attending to them exposed how design knowledge is inseparable from corporeal participation. To learn about shadows was to learn how to stand, bend, wait, squint, and adjust pace. The theoretical framing was enacted through posture, movement, and making; more than

through language. Much unlike with the drones, I thrived in this space; finding it easy to enjoy the materiality and playfully engage with it. The entanglement of drones with deep political issues had foreclosed a space that I could once more find in the poetic dimensions of shadows and bare-skin touch; in the connecting of people rather than ocular distancing; in purposeful uselessness rather than undesirable expensive tech disguised as progress.

Shadows, with their ambiguity and resistance to capture, provided a particularly fertile ground for making this entanglement visible. This reframing complicates distinctions between method, theory, and design practice, suggesting instead that sensibilities are where these domains meet—although curiously often left in the shadow of other more accepted academic practices.

3.4 Paper 7: Sensibilities as Knowledge in Design Research

If the previous paper attended to shadows as a subtle yet forceful material through which sensibilities in interaction design may be cultivated, this paper shifts focus from material attentiveness to the conditions under which such sensibilities become possible in the first place. It turns to architecture as a discipline in which sensibilities are often poetically and intentionally formed, fostered, and contested through many practices of reading, designing, and experiencing. Architectural practice is approached as a long-standing cultural project of cultivating ways of sensing, judging, and caring for atmospheres. These are precisely the cultivated ways of knowing that I carried with me which came in tension with the expectations of my research with drones within HCI.

These ways of knowing are grounded in phenomenological accounts of embodied perception [136], [137], architectural theory concerned with atmosphere, material presence, and the sensing body [17], [160], and feminist and post-human epistemologies that resist universal standpoints [60], [150].

In this paper, we (Kristina Andersen and I) focus on describing sensibilities as a form of knowledge, particularly situated within what Redström describes as design programs [129]. **We argue for sensibilities to be understood as neither subjective preferences nor individual skills, but as situated, relational, collective, and programmatic knowing.**

3.4.1 Problem

Within HCI, sensibilities are often present yet under-theorised. They appear as tacit qualities—taste, intuition, or aesthetic judgement—rather than as epistemic commitments that actively and intentionally shape and are shaped by what can be designed and known. This obscures the collective and relational dimensions of design, and makes it difficult to account for how certain ways of sensing and valuing come to dominate design practice and become appended to theorisation within the discipline.

In contrast, architectural practice makes sensibilities explicit through its pedagogical structures, studio cultures, and historical lineages. Drawing on Redström[129], the paper frames these structures as forms of intermediate level knowledge appended to design programs: inquiries that articulate what matters, what should be attended to, and how design ought to be conducted. Program do not prescribe solutions; rather, they cultivate sensibilities by shaping attention, framing problems, and delimiting what counts as meaningful architectural work. Fundamentally, what we recognised as the problem is an aseptic view of forms of knowledge within design research, with a certain tendency to consistently attempt to distance knowledge away from the bodies of the researchers.

The proposal addressed in this paper is how HCI might engage with architectural ways of knowing without reducing them to isolated concepts or aesthetic inspiration, and how sensibilities—understood as programmatic commitments—might be acknowledged as central to design epistemology.

3.4.2 Methodology

The paper adopts a diffractive methodological stance [150]⁹, reading architectural practice and HCI through one another to surface differences (rather than only agreement) in how knowledge is produced and legitimised within design research. Our aim was not to extract architectural principles, the analysis attends to architectural sensibilities as they are cultivated through programs, traditions, and shared or contrasting practices. Leaning on a variation of first-person methods [161], this essay-like paper sits at the overlap between the lived experiences of its two authors.

Central to our work is the notion of the skin, drawn from architectural phenomenology [17]. The skin is understood as an active sensing surface through which bodies encounter materials, light, and atmosphere—not a passive boundary. The method of our paper uses the metaphor of the skin to explain what a sensibility might become: not something superficial but the very interface through which we experience the world and grow marks through practice. But we go beyond the metaphor, towards what Lisy would call a figuration of the skin [162]¹⁰. In design, a sensibility is a physical and material state that traverses the theory-practice stack, with large implications to accepted epistemologies and methodologies. This emphasis resonates with Merleau-Ponty's phenomenology of the lived body [136] and extends the attentiveness developed in the previous paper towards new implications to the corporeal dimensions of what is described as theory.

In that sense, the method becomes blurred to the point of near irrelevance. Part of this articulation was embedded in the writing of the paper itself, and the iterations it suffered, alongside the conversations we had with others¹¹. Very late in this process, I had a number of conversations with my dear friend Nadia Campo Woytuk¹². We are both submitting our thesis almost simultaneously, and she chose to portray her approach to *Feminist Sensing* as a sensibility. In conversation, I resisted it, trying to argue that she in fact describes a set of sensibilities that fall under the *practice* of feminist sensing, and what she describes as its core part: leakiness and tactfulness. Her thesis to be soon published describes these in detail, but in short they describe tolerances to ambiguity and de-stabilisation of boundaries and a willingness to remain soft and emotionally attuned to design choices. My discussion with Nadia indicates that the idea of sensibilities as a form of knowing was welcome in her work, but also seemed to show that my definition of sensibilities will go through processes of leakiness and tactfulness at the hands of others. I am not concerned with the labelling of something I would not specifically agree is a sensibility as one; rather, I am satisfied that their articulation is helpful in one way or another. I will return to the hopeful use of sensibilities by others in the conclusion of this thesis.

⁹There is a methodological resonance between this paper and Paper 5 described in section 3.2. Rather than necessarily attempting to converge to an established set of sensibilities, we left the space open. Similarly to the notion of *dérive* in section 3.3, our methodological stance leans on drifting through the readings and practices, articulating these sensibilities as transitional and open to be contested.

¹⁰Dominika has not only been a friend throughout all the years of my PhD, but she has also consistently been a co-thinker that challenges my thoughts fearlessly but with the utmost care. I am so grateful for all the roles she has fulfilled in my life.

¹¹This paper was read by many peers, effectively peer reviewed openly. We thank Kia Höök (again!), Anna Vallgård, Jonas Löwgren, Catherine Wiczorek, Joe Lindley, Matthew Lee-Smith, and others who have given us helpful challenges to our ideas.

¹²The most loving thing in this exchange is how much she wanted to cite this paper, proof that academic work is relational. Nadia and I walked side by side, almost literally hand in hand throughout our PhDs. She has been my most caring and loving friend, and all I can hope for is that we keep walking together.

3.4.3 Contribution

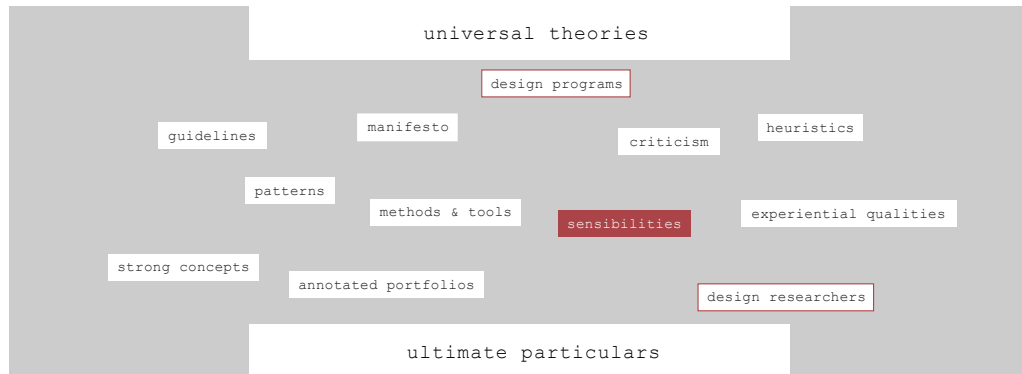


Figure 3.7: A schematic view of how sensibilities can be framed as intermediate level knowledge. In this view, we consider the design researcher as an ultimate particular, and argue for sensibilities as a form of intermediate-level knowledge that can be articulated, much as other already accepted forms. Adapted from Höök and Löwgren’s mapping of intermediate-level knowledge [131].

This paper contributes to HCI by articulating sensibilities as programmatic, collective, relational, and embodied forms of knowledge. First, it extends Redström’s notion of design programs by showing how they operate not only at the level of inquiry and artefact, but at the level of *becoming*. Architectural programs are shown to cultivate particular ways of being in the world, shaping what designers come to see as relevant, meaningful, or worthy of care.

We position sensibilities as collective epistemic sites rather than mere personal traits or resources to be tapped into (as for example soma design would argue one should do with somatic connoisseurship [143]). By drawing attention to architectural training and design programs, the paper shows how sensibilities are cultivated over time through co-applied methods, shared references, collective readings, conversations, and resonating practices.

These conversations included others, and also an attentiveness to casual or emergent uses of the word. Within STS (Science and Technology Studies), there is a widespread description of ethnography as a practice that comes with a sensibility. I had the privilege of meeting Annette Markham, Sarah Pink, and Jessica Mesman within weeks of each other¹³. While I did not quite arrive at an understanding of a definition of sensibilities in STS, all of them expressed a certain leaning towards understanding them as a “willingness” to do something. For design, this willingness might mean the urge to act in creative makings. They also reflected in how they could, for example, recognise an ethnographic sensibility or an STS sensibility in others. Jessica Mesman led me towards Woolgar and Lezaun. In their paper, they state:

“Rather than implying a commitment to a certain perspective on difference, materiality or politics, our field’s current curiosity about ontologies and their enactment is best understood as a way of extending its idiosyncratic critical sensibility—an appreciation of fluidity in seemingly stable entities, a recognition of difference beyond claims to singularity (and vice versa), a reluctance to take the world at face value—to the realm of the ready-made, to the world of those entities whose being might seem most unproblematic and ordinary” [163].

¹³I thank all three of them for the helpful and generous conversations.

This description seems appropriate as a (albeit still vague) list of possible sensibilities pertaining the becoming of an STS researcher. Similarly, we see these within design. To help in this process of articulation, our paper introduces the metaphor of the skin and the constructed *we* as conceptual tools for analysing how sensibilities are embodied and shared within design disciplines. These notions rely on what I describe above as corporeal theory: dimensions of sensibility-building, noting how through the work we choose to engage with, we also make ourselves open to changing and *becoming* otherwise.

Finally, in relation to the previous paper on shadows, this work gives further examples of sensibilities as a long-term disciplinary practice that takes time, impossibly achieved in a momentary design exercise. Where shadows offered a material entry point for re-training attention in interaction design, architectural practice is presented here as an example of how such attentiveness can be upheld through programs that endure and afford consistent returns to. Both papers argue for an interaction design epistemology that takes sensibilities seriously—as cultivated, contested, and consequential ways of knowing; as contributions in themselves rather than a fully tacit characteristic that can only benefit or be used by their carrier. We open conversations on sensibilities as both embodied and political, shaped by who is invited to participate in a given design program and question whose ways of sensing are legitimised within design epistemology.

3.4.4 History of this Paper

Initially, this paper was written as a single authored contribution largely based on the articulation of first-person experiences with both education and practice. It was submitted to the Aarhus Decennial, but rejected on fair methodological grounds; although appreciated for its contribution to design theory. Much of my preoccupation with intermediate-level knowledge, at this point, had been with the transferability of knowledge.

However, clearly there were alignments with many colleagues with architecture backgrounds who now worked in interaction design that I had seen throughout the years. I had for a while been wanting to find a good excuse to collaborate with Kristina Andersen, whose work I had read and admired¹⁴. I reached out to her with a proposal to expand the paper with her own perspective, and a suggestion for the articulation of sensibilities we identified in one another. This became an exercise in alignment and misalignment, and in the positioning of what we both saw were desirable forms of knowledge in our research field.

This paper went through a visit to the CHI submission system, where we received helpful reviews but the conclusion was that while it opened a valuable conversation, that the contribution was not distinct and actionable enough for CHI. The recommendation was to consider submitting to other venues where the reflective and theoretical content would be better received. Somehow, such a comment is in line with considerations on what sensibilities are welcome where. Ours—in the lack of directly actionable paths—needed to find a home elsewhere. It brings the question if venues ought to be explicit on what sensibilities are expected to be presented in the content of the papers.

Immediately after, and with reinforced certainty in our claims, we submitted it to DIS which turned out to be the venue where it was well received. This thesis will be written

¹⁴As academics, we are meant to be wordsmiths, but I do not think I can properly express my gratitude towards Kristina. She is the very representation of a role model. I will always feel undeserving of the companionship and kindness she has offered me. It is no surprise that both Elvia Vasconcelos and I independently came to realise she is our ‘fairy’ godmother in academia.

before the paper is presented, but its journey reinforced the argument contained in the paper itself: that the sensibilities both Kristina and I could articulate were at the core of our continued collaboration. Writing this paper was such a joyfully challenging task, precisely because our sensibilities aligned to an extent that allowed for our arguments to flourish alongside each other.

3.5 Concluding Sensibilities

These three articles close the loop between the previous chapter and this one. Starting with an attempt to produce design knowledge through making with drones, to the recognition and turn towards what *type* of knowledge was being made in that process—and what sensibilities were fostered. Through reflexive and diffractive practice, phenomenological grounding, and engagement with design programs, I argued in this chapter that knowledge in design is co-constructed through lived experience, attention, and ongoing interaction between theory and practice.

Across the three papers this centrality follows: that theory is not simply applied in design—it is lived. Through processes such as autoethnographic reflection, somaesthetic exploration, and architectural inquiry, theoretical concepts become embedded in the designer's body, shaping perception, judgement, and makings. When looking into the forms of knowledge we already accept within design epistemology, I formulated an attempt at defining design sensibilities as a form of intermediate-level knowledge: digging further than intuition or the tacit, and pondering on the intentionally cultivable orientations that guide how designers notice, interpret, and care.

The concept of corporeal theory captures this entanglement most clearly—along with the ideas of theory as a skin. It describes how theory sediments into embodied experience, determining how designers engage with the world. Here, the boundaries between ontology, epistemology, and methodology collapse into lived practice. Designing becomes a process of *becoming*, where both the artefacts and the designers are continuously shaped.

The chapter positioned sensibilities as collective and programmatic forms of knowledge. They are developed over time through participation in design cultures. Recognising sensibilities as legitimate knowledge contributions calls for greater attention to how theory is embodied, how experience is shared, and whose ways of sensing are allowed to matter. The corporeal and relational orientation I bring up has political implications which we will discuss in the next chapter. In fact, the feedback we consistently received on this last paper was towards asking for more: more sensibilities of others. I cannot do this work alone, but hope to learn how to facilitate the articulation of others' sensibilities as an argument for their inclusion or—provocatively—their exclusion.



Chapter 4

Design Pending Revolution

In this chapter, I present two facets at the end of my PhD: design research as relational practice, and design research as pre-revolutionary. They complement each other and are referential to the previous work presented—however here the focus is on finding paths forward. **The main contribution of this thesis is centred on sensibilities, but this chapter attempts to speculate on and discuss what is the effect or consequences of taking such forms of knowledge seriously.** While this chapter includes no publication, it describes a large body of work outside or at the fringes of formal academic expectations. This is work that I am significantly more proud of but would not count by any formal measurement of doctoral success.

First, I tell a number of tales that made me understand the relational in design research (including the work on sensibilities, refusal, fabulations, and academic service); followed by three early proposals for the role of design research as a form of preparing for revolution (correspondence, instigation, and moratorium). These three proposals indicate the work I have partially started and intend to continue orienting myself towards.

Prologue: Survival Pending Revolution

The phrase “survival pending revolution” was coined by the Black Panther Party for Self-Defence in the late 1960s; a revolutionary Black socialist organisation founded by Huey P. Newton and Bobby Seale in Oakland, California. This formulation expressed a dual political strategy: to address the immediate material needs of Black and other marginalised communities under racial capitalism, while building a longer-term revolutionary movement oriented toward systemic transformation. The concept emerged within a context of state neglect, structural racism, and violent repression; particularly in the United States of America, but since had broader implications for de-colonial thinking.

The Black Panthers developed a series of community-based *Survival Programs*, including free breakfast for children, health clinics, education initiatives, and clothing and housing assistance [164]. On March 20, 1971, the issue of the Black Panther featured the banner headline “Survival Pending Revolution” with the illustration of a woman bearing items labelled as free items and services for the people. It also included a quote by Huey Newton: “*There must be total transformation. But until that time that we can achieve that total transformation, we must exist. In order to exist, we must survive; so therefore we need a survival kit*” [p.368 164].

These programs were not simple acts of charity, but political interventions designed

to both support life and expose the failures of the capitalist state to care for its citizens. In a text from the 5th of June 1971 named “Black Capitalism Re-Analyzed I”, Newton noted: *“All these programs satisfy the deep needs of the community but they are not the solutions to our problems. That is why we call them survival programs, meaning survival pending revolution. We say that the survival program of the Black Panther Party is like the survival kit of a sailor stranded on a raft.”* [p.105 165]

The Panthers’ approach understood survival as a precondition for resistance: a way of nurturing political consciousness while meeting urgent needs. For years, the FBI implemented significant efforts to disrupt public support for the Panthers’ breakfast program [164], revealing how even state power recognised acts of care as subversive when aligned with revolutionary aims.

As a researcher and practitioner situated within the cultural and institutional spheres of design and academia—spaces historically entangled with colonial, capitalist, and exclusionary systems—it is vital for me to approach such concepts with critical humility. To invoke “survival pending revolution” from a position of privilege requires an ongoing reflexivity about the uneven distribution of vulnerability and precarity¹. I am profoundly aware of the risk of appropriating radical Black political thought into abstract or aestheticised framework, but I present it here as a sincere effort to engage with its political clarity and urgency. Hence, this chapter is titled “Design Pending Revolution” as a celebration and admiration of the efforts of the Black Panther Party.

My work is part of contributing to many tales of resistance of the instrumentalisation of design as a tool of innovation (at the service of capitalism²) and instead a call towards considering refusal as a way to make space for mutual aid and abolition, pending the revolution we all need.

4.1 Relational Sensibilities in Design Research

There is a contradiction between the expectations of a doctoral thesis and the realities of current academic work. Particularly within design, it is advisable and essential to do work in collaboration with others. **In this section, I first tell how my work in sensibilities has led to the recognition of the work outside the mere writing of papers as the outcome of my dissertation. This is followed a set of relational practices within design research that I have applied throughout my PhD: refus-**

¹Although academic work is also quite precarious, with universities increasingly led as companies and pushed towards producing outcomes that are in the service of industry, at a time when academic freedom is severely endangered.

²I place this as a footnote but it became quite central in my later work. The thread that joins the descriptions of design work in the small in the following section is somewhat related to the economies of design. All of the examples below operate at the margins of capitalism. There is a tangential but somewhat important note to consider: one could argue that design, in particular industrial design, has found a strong grounding for its epistemology in its economic value. As many artists may struggle to justify why their knowledge matters because it has no immediate result in capital, design could instead lean on its contributions to capitalism even if in the form of a more user-centred approach. While I decided to curate away the notion of alternative economies from this thesis, it will likely play a fundamental role in my future work, largely inspired by Gibson-Graham’s *“Diverse economies: performative practices for ‘other worlds’”* [166]. Below, when I speak of stickers, posters, embroidery, postcards; they are all moves away from that instrumentalisation, and are instead representations of gift economies. Design can and has operated precisely within those alternatives—especially within academia where some of the labour is actually about gifting and sharing—but there is much to do in considering other markets such as informal, bartering, underground, and even theft. Likewise, the work of designers should be highly compatible with wage systems organised by cooperatives, reciprocal labour, or in kind exchanges. This is a seed for future work that will come, but nonetheless one that I see mattered to the makings described below.

ing, fabulations, and pirating. These practices have not resulted in research *per se* but they have created paths and ties with others—a way of collectively fostering certain sensibilities.

Arriving at the discussion of refusal as relational care in design research was only possible after the recognition that sensibilities are a form of knowledge. As described in the previous chapter of this thesis, the articulation of both collective and individual sensibilities has consequences on the research being conducted—or on what is possible to design or *not* design. Hence, this section on design as a relational practice is strongly grounded on a process that happened after the active development and articulation of my own troublemaking, provocative, activist, subversive, and resistive sensibilities³ through these small design moves. While some spilled into the articles, some live outside them.

While I wish I had come to this point earlier in my PhD, it took a large effort to even consider such a mode of research as something available to me. Hence this final chapter of the thesis is precisely an attempt to argue how a research journey can be clear on regret and re-framing. This liberation was only made possible through the many academic connections I made throughout the years. To them, I am grateful, although I could never do them justice in this text, I hope I do outside of it.

4.1.1 Refusing

Design is traditionally oriented towards making and producing new artefacts, but a growing body of scholarship challenges this imperative by considering *design refusal*: the conscious decision to refrain from designing or to undo existing designs. Cameron Tonkinwise, in his work *Design Away: Unmaking Things*, highlights that design is inherently destructive, as new interventions disrupt existing systems, and argues that designers should critically reflect on when and why to create [3]. Similarly, Tony Fry's concept of *elimination design* advocates for removing unnecessary or harmful elements rather than adding more artefacts, promoting thoughtful restraint and ecological responsibility [167]. This resonates with the notion of exnovation: the intentional process of phasing out or removing outdated, unsustainable, or ineffective technologies, practices, or systems. While HCI tends to require implications for design, Baumer and Silberman discussed what should be done to open up for the possibility of research to be a negative result of refraining from design [4].

Erik Sandelin introduces the concept of “adesign”, a radical act of creative restraint that challenges the tradition of forceful intervention in design. He posits that designers can engage in “grace”, the capacity to “leave be”, thereby resisting the impulse to impose solutions where they may not be needed [5]. Lindström and Ståhl, through the Un/Making Studio, explore the aftermath of design, focusing on the processes of unmaking and the ethical implications of undoing design decisions. Their work interrogates how design can be a tool for deconstruction, particularly in the context of environmental and social concerns [2]. Similarly, Sara Homewood contributes to this discourse by examining the ethical and critical dimensions of inaction in design. In her 2019 work on self-tracking technologies, Homewood reflects on the decision to *not* design tools for menopause, arguing that inaction itself can be a deliberate and responsible design choice, preventing the imposition of potentially harmful or reductive technological interventions [168].

³Curiously, as mentioned above in section 2.5.4, drones themselves have been used as tools for this type of resistance. Had I come to these insights earlier, rather than the refusal of drones; I might have done the exact opposite on supporting further activist work with these machines—even with its evident limitations.

In conversation with Åsa Ståhl herself⁴, I noted how from my own architectural sensibilities, the idea of unmaking as a basis to something new was embedded into any design. Either through renovation or new building, every building site begins with destruction. Hence to make, something always had to be unmade. This view is, of course, not as tangible in industrial design practice, as products just seemingly appear out of the blue, particularly when the distance between design and production is bigger and bigger⁵.

These perspectives advocate for a shift in design forms of design knowledge: one that embraces inaction, destruction, removal, and instigation as legitimate design strategies. For someone with a background in architecture, this came as no surprise. In the first years of my education I studied interior design, which often started with drawing what is called in Portuguese a yellow-red floor-plan, where yellow lines mark what is to be demolished. Demolition is often a given in architecture—but not as much within design practice. By engaging in design refusal, designers not only challenge the imperative of constant production but also open spaces for alternative futures that prioritise relational qualities and acknowledges that design does not start from nothing. Any material used implies the destruction of something. What such refusal means in an academic context, however, is less impressive. As design research rarely produces at scale, the refusal from working is limited to what could arguably be portrayed as a self-centred whim. But as previously argued, for feminist practice, the importance is in horizontal pollination of knowing, in relational doings “in the small”. I do not reject the importance of creating exemplars of refusal; but with such work done, we might need to consider how to propagate said refusal.

For example, recent work in HCI has extended the notion of refusal from the design of artefacts to the governance of data. Zong and Matias introduced the concept of *data refusal from below*, a framework for understanding how individuals and communities actively resist participation in data collection and surveillance practices [169]. This perspective parallels the focus on restraint and inaction in design, highlighting refusal itself as a generative practice: just as designers may deliberately choose *not* to intervene or create, users may purposefully choose *not* to participate in datafication processes. If the role of design is to facilitate the ability for others to refuse, then we might be leaning closer to design as an agent of refusal.

I return to this topic later in this chapter, when discussing design as pre-revolutionary (see section 4.2). But this set of examples in refusal have mirrored themselves into my work; where I progressively refused to engage with the inevitability of drones and to buy-in compliantly into the primacy of publications as the primary outcome of research. However, such moves have come at the cost of relationships. To refuse is often to create conflict. In fact, if the refusal is not creating any friction, is it in fact refusal? From an activist’s perspective, refusal is a blockade of business as usual. A “no” said with the impact of causing inconvenience or provoking a stir.

There are many examples of organised nay-saying, but perhaps none as recognisable as the Luddite movement⁶. In and outside of academia, we see a rise in both re-discussing the Luddite movement, but also the surfacing of neo-Luddite movements. Within HCI,

⁴I must thank both Åsa Ståhl and Erik Sandelin who I ended up meeting at the very end of my PhD for incredibly inspiring conversations. I frankly wish I had come in contact with them much earlier, as I am sure they would have decidedly shaped my path.

⁵This could be seen as a strong argument to keep all design educations tightly connected to craft.

⁶I want to acknowledge that my dear friend Guilherme Trindade, who has patiently and encouragingly listened to me trying to explain this thesis, has told me of many other examples such as the Levellers and the Münster rebellion of the Anabaptists. His friendship is the ultimate safe space.

there is already a body of work using the Luddite movement as inspiration. Sabie, Soden, Jackson *et al.* argues that examining historical Luddite practices, such as material destruction, myth-making and community action, can offer insights into how unmaking can be understood as a form of emancipation in HCI research [1]. Within the broader critique of “non-use”, the idea of Luddism resonates as an example of historically grounded resistance to technological regimes that surface how choices about technology (including refusal and disengagement) are shaped by political and social conditions rather than simple technophobia [170]. Baumer and Khovanskaya propose “remantling” as an alternative conceptual orientation to “non-use” that directs researchers’ attention to the social relations, subjectivities, and temporal conditions through which technologies and practices take shape noting that “it would be disingenuous and absurd to characterize, for example, an individual Luddite smashing a power loom as merely a personal decision to reject or selectively disengage⁷ from industrial weaving technology. To omit the organized political movement and its broader program of societal transformation in which they were participating would obscure the collective, future-oriented nature of their refusal.” [170].

Outside academia, people gather under similar banners in resistance to the enormous harms of technology. Much of their actions relying on civil disobedience; but with certain technological savyness. For example, an anonymous group of San Franciscans called “Safe Street Rebel” realised they could disable the automated Waymo and Cruise taxis by simply placing traffic cones on the vehicle’s hoods, using the tactic to protest the proliferation of self-driving vehicles⁸. Brian Merchant’s work offers a revisionist account of the Luddites that challenges their popular depiction as irrationally anti-technology, instead framing them as skilled workers engaged in a politically conscious struggle against the social and economic consequences of industrial capitalism. His book *“In Blood in the Machine”* situates Luddism within a broader history of labour resistance, emphasising that the Luddites opposed not machinery per se but the deployment of technology in ways that undermined wages, working conditions, and communal autonomy. In one of his recent blogposts, he mentions how “The Luddite Renaissance is in full swing”⁹. Members of an anti-technology collective have organised events in New York with calls such as follows:

On September 27, the S.H.I.T.P.H.O.N.E. rally and march will begin at 3pm sharp on The High Line in Manhattan, between W. 12th and W. 13th Sts. S.H.I.T.P.H.O.N.E. stands for *Scathing Hatred of Information Technology and the Passionate Hemorrhaging of Our Neo-liberal Experience*. Hundreds are expected to take part in this carnivalesque collective grievance against technocracy. Soapboxes will be made available for people to take turns voicing their screeds against Big Tech. There will be surprise guest speakers, gnomes, chanting, bullhorns, song, a vigil for boredom, and last, but not least — tech smashing! Come join the parade!

The facet of provocation that comes with refusal is at the core of a relational design practice: to refuse an unfair brief, or to reject an intervention puts a sensibility or value at the forefront that will create (or make visible) alliances or misalignments. Perhaps, in

⁷This quote is edited as the original reads ‘engage’. I reached out to the Eric Baumer and Vera Khovanskaya, and they had a laugh at it, allowed me to change it, and were happy someone scrutinised their paper that closely.

⁸See their campaigns: <https://www.instagram.com/safestreetrebel/>

⁹<https://www.bloodinthemachine.com/p/the-luddite-renaissance-is-in-full>

an academic context, acts of refusal can be recognised as a form of instigation towards a community of action at scale. My thesis, rather than claiming once more to expose refusal as a possibility, seeks to recognise that a sensibility for refusal can be key to collective action. In this section, I presented a number of other work in line with refusing as the background to my closing proposals. While I do not make a broad point or frame a new form of design refusal, I point instead at the common threads in resistance within our field that gives us the possibility of coming together with a common goal: one of revolution.

4.1.2 Fabulating (in the small)

Fabulation, as developed in feminist technoscience, provides a way of telling stories that resist singular or authoritative accounts. Haraway introduces the notion of *speculative fabulation* as a practice of world-building that entangles fact and fiction, offering partial, situated, and accountable narratives in place of universal truth-claims [74]. Rather than projecting distant utopias, fabulations centre relationality and care, inviting us to “stay with the trouble” of the present. Rosner extends this approach within design research, using *critical fabulations* to challenge dominant narratives of technological progress and to surface histories that are often erased, such as those of maintenance, gendered labour, or colonial infrastructures [171]. This use of critical fabulation is indebted to Black feminist scholarship, particularly Hartman’s articulation of critical fabulation as a method for narrating lives and histories that have been systematically excluded from the archive, by combining rigorous historical research with speculative narrative while remaining accountable to archival violence and absence [172].

Feminist fabulation has become a generative method in design research, quite in line with other forms of speculation, but still different in its approach. Building on Rosner’s exposure the erased histories of maintenance, repair, and women’s labour in technology, Søndergaard and colleagues employ fabulation as a way of design futuring, engaging with bodily materials and more-than-human relations [173], [174]. Across these perspectives, fabulation intersects with craft: whether through mending practices and the speculative crafting of alternative futures explored by feminist design researchers [175]. In the context of my thesis, I read and work with fabulations as an opening to unsettle linear progress stories and existing assumptions.

I choose to look at fabulations as a pre-figurative practice¹⁰. Prefigurative practices, originating in anarchist and radical political movements, refers to the enactment of desired social or political futures in the present, rather than treating them as distant

¹⁰I will not get into detail on this, but for example, prefigurative politics, as articulated by Raekstad and Saio Gradin [176], is the practice of creating the social relations and organisational forms in the present that one wishes to see realised in the future. Rather than deferring justice, equality, or freedom to some distant point, prefigurative politics enacts these values in the here and now. It emphasises horizontality, mutual aid, and participatory decision-making, insisting that the means of social change must reflect the ends sought. Prefigurative politics is both ethical and strategic: it demonstrates that another society is possible by living it through everyday, rather than merely theorising or campaigning for it. Examples can be found across a range of social movements and collective practices. In anarchist movements, occupied spaces such as social centres or community gardens are organised without hierarchy, modelling the egalitarian structures they aspire to. Feminist collectives and co-operatives often implement prefigurative approaches by embedding care, shared labour, and inclusive participation into their daily routines. In the digital realm, open-source projects can also embody prefigurative principles, experimenting with collaborative, non-proprietary modes of production that prioritise transparency and community governance. Even movements like *Occupy Wall Street* were prefigurative: general assemblies, working groups, and mutual aid networks were structured to reflect the participatory, non-hierarchical society activists were advocating for, making the process of organising as important as the political demands themselves.

goals to be achieved later. Within design research, this translates into approaches that create artifacts of alternative ways of living, working, or relating to technology here and now, rather than only imagining them in speculative narratives. This attitude is somewhat at odds with many approaches within critical and speculative design, where the designed pieces exist in the confinement of a museum.

Hence in this section I describe labour I have done within my doctoral studies that would not be considered the work for a thesis. However, I would strongly argue that if the utopias we want to fight for are to exist, then the relational practices in design research must also be allowed to be relevant visible labour—even when they are actions done in the context of “digging where you stand” and “in the small” as mentioned in the introduction of this thesis (see section 1.4.1). I give a set of four examples in the form of stickers, illustrations, embroidery, collective poster-making, and correspondence (in postcard form). All of these are portrayed as fabulations as they work outside the perceived rules and hierarchies of academia; work in the small that centres care and relational threads not usually seen as contributions. They stay with the actual trouble that is *being* and *becoming* an academic, while still carrying a design attitude that acknowledges the effects of materialities in our bodies, the experiences that are often neglected, the friendships forged, and the chance encounters we face as forms of knowledge beyond text. All of these are small design moves that nudge at pollination rather than scale; a perspective worth considering in tandem with sensibilities as they are mostly developed by relational contact.

4.1.2.1 Stickers

I could tell a myriad of stories about stickers, but we can start by recognising the rising popularity of stickers on devices and personal items. The first sticker I ever put on my phone and laptop was given to me by Nadia Campo Woytuk, an illustrated colourful representation of a vulva. Its low-level provocative nature inspired me to start making some stickers myself. At this point, a fair portion of the HCI community has at least one of my stickers on their laptops—by far the most popular one being the qualitative researcher one I made sometime in 2023 (see figure 4.1).

The stories that come with those stickers vary, but they tend to be inspired by someone, and have moved with my research and the themes that have surrounded it. For the Designing Interactive Systems (DIS) conference in 2024, I made a small sticker with a simple human shape, and overlapping circles signifying feelings, or inner worlds. This small sticker fits perfectly on the top part of most mobile phones. At a small event in Halmstad, I met Sarah Pink, who is an influential researcher for my work for her extensive writings on ethnography. Out of the full set of stickers I have, she picked this small one as she thought it was the only one she could stand by; the others made too much of a statement, perhaps. Months later, a friend recounted how he met her in Australia and did not quite know how to approach her until he saw she had the same sticker as him on her phone: it became the perfect ice-breaker.

I often get pictures from friends and colleagues of when they spot these stickers in the wild. As Courtney Reed once wrote to me: *“I am at a Dagstuhl seminar this week, I met Lone and we shared a cab together. She has your sticker on her phone case and we discussed how your stickers are like a secret symbol language for quickly determining good people to spend time with.”* Somehow, the stickers that people choose to include or not in their set say a lot about their stance in research, and who they are. Laptops are often used in conferences and other academic events, and the choice of stickers on them is hardly a neutral act. It is worth considering that collections of stickers are a form of



Figure 4.1: A photograph of my laptop front as of April 2026, with annotations on each sticker. This collection is only but a time stamp of an ever-changing collage. I only now realised I likely have to return this laptop to the university at the time of defending this thesis, which is unfortunate.

positionality enacted in the real world, as an important design move.

Occasionally, I do get the question as to why I do not sell them, nor write my name on them. But the reasons for rejecting both of these suggestions are fully in line with the fabulatory framing described above. The economy of stickers is a pre-figurative world-making thing. The exchange and collection of stickers, for free, is a beautiful representation of gift economies. Of course; I finance mine by syphoning my research grant, arguing that they are indeed part of the graphic material of my work. But this is not optimal: it is still a workaround using the master's tools (which will never dismantle the master's house [177]). Nonetheless, they operate as exchanges of feelings and ideas, creating commonalities. They are signifiers of particular sensibilities—a qualitative researcher's, an anarchist's, a feminist's. These are not, nor do I want them to be, appended to one particular name. I want them to be collectively owned without belonging and without claims of intellectual property or first authorship. Often, these stickers will be copies of copies or re-interpretations of ideas, with novelty mattering less than transferability. Much as I imagine academic work should operate like.

4.1.2.2 Sketching and Illustrations

Throughout the years, my research took often a turn towards the analysis and use of visual methods. In the included set of publications, there are some traces of this emphasis, particularly the papers presented in section 2.3 and 3.2. But beyond that analysis, my practices of sketching and illustration also created opportunities for collaboration and work both in resisting text-only oriented academic work, but also in allowing me to come to close contact with other researcher's work not only through reading, but through

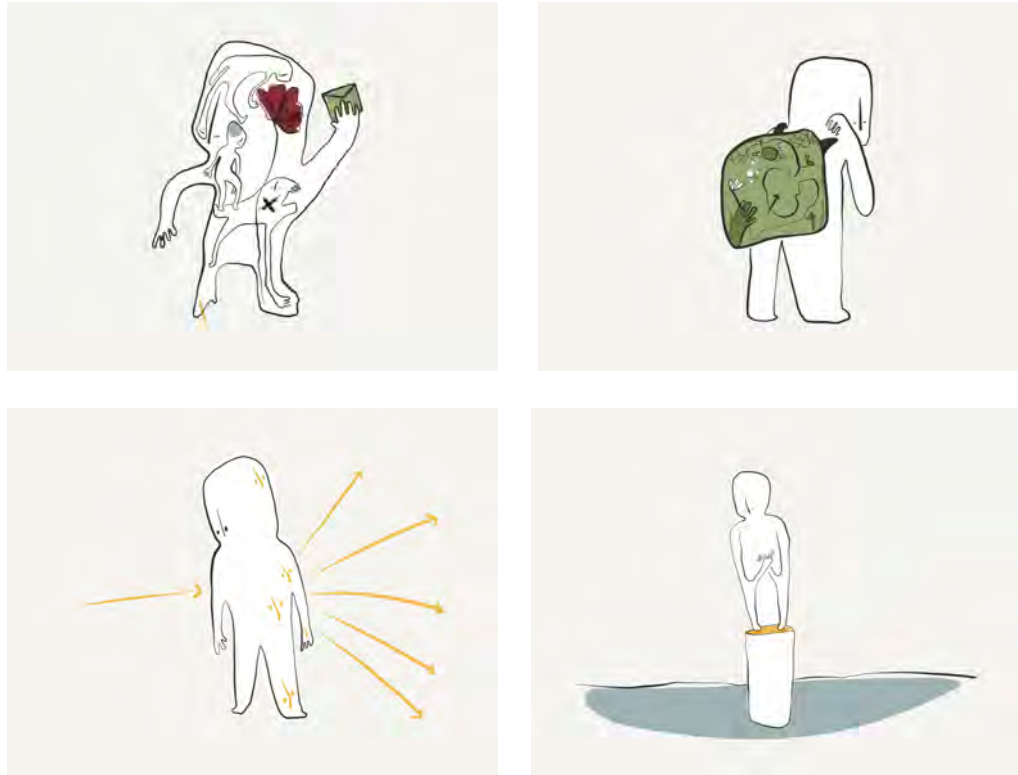


Figure 4.2: A collection of four illustrations I made for Rachael Garrett.

conversations materialised into sketches and illustrations they could use moving on. For example, illustrating Pacheco and Frid's stories of earthquake narratives brought me closer to her felt experiences¹¹, and reason myself on the topic of the paper: making spaces for others in my own autoethnographic or first-person studies [178].

Rachael Garrett and I have had an illustrative collaboration for years. She is a brilliant researcher, with a strong theoretical grounding, and ideas that I have always found so intriguing they tend to need some sort of visual processing on my side. Years ago, she asked me if I could illustrate the presentation of some of her research [179]¹². She sent me a draft, and after reading and talking with her, I offered her a set of illustrations inspired by her work. I saw her use them and present them (always caring to name me when using the drawings), often times adopting representations that I had come to from completely different parts of the text (see figure ??). But her appropriation and re-interpretation consistently opened up for different ways for me to read her work. This process helped me, inspired by her work, to continue on a path of properly defining sensibilities.

At the very start of my PhD, Rachael invited me to be part of a week-long Soma Design workshop on a beautiful island outside of Stockholm. This one event opened up so many paths for me. I ended up writing and publishing a pictorial out of drawings made during this event—a mixture of sketches and sketchnoting [9]. While we were encouraged to just be in the room, I eventually realised I could not make sense of the

¹¹Claudia has become such an important collaborator and friend throughout the years. I have had so many in-depth honest conversations with her, and I will always appreciate her blunt but caring feedback.

¹²A heartfelt acknowledgement for how much she has taught me throughout the years. She can read and process theory like nobody else I know, and yet still keep a well rooted approach filled with awareness.

information without holding a pen and sketching it. Towards the last days I caved in, and went back to my usual practice of drawing as a form of listening. As I started returning to this, I met Kristina Andersen, who was working with yet another Portuguese PhD student (Elvia Vasconcelos) who is also well versed in sketchnoting and annotation [180]. Both Kristina and Elvia became, throughout the years, fundamental friends and collaborators. It was a coincidence—Elvia and I actually overlapped at the same architecture school for a year—but we had never met. Through our appreciation for the visual methods, we collaborated on a number of small projects, including a demo where we performed together [181]. This collaboration took winding paths which included being invited to hold a large workshop at the Delft Feminist Generative AI Lab¹³.

This emphasis on visual forms of knowledge, sketching and illustration, is not portrayed here as the main contribution of this thesis, but they could have been. In fact, these small collaborations became rather fundamental to my articulation of the importance of alignments and community building. In this exchange, thoughts were worked through a sketching practice and gifting to one another. It required a lot of negotiation, of layering and of compromise. Stemming this work, we developed a set of agreements for collective real-time sketching practice in design research, which we care with us as a way of articulating care for each other while holding the pen together¹⁴.

4.1.2.3 Embroidery

Along with illustration, I started exploring a number of other practices that would extend the materialities of my sketching practice. Sketching had, throughout the years, become a type of work that I do fairly quickly. Not only that, but I purposefully moved away from detailed drawing (as was customary in architecture school) towards a faster and less precise type of practice. At this point, I saw the need to intersect sketching with a different making that would attend to threads and slowness. I was raised by women that knew how to handle textiles, but did not take them particularly seriously. My mother tried many times to teach me how to cross stitch and knit¹⁵. My grandmother¹⁶, although she was very good at sewing, I never remember any attempts on her side to teach me any of that practice. She likely thought the availability of fast-fashion was such a relief, it meant we no longer needed to spend so much time mending, a detachment from the drudgery of that work.

Of course, now with perspective on the impact of these industries, we see a certain return to visible mending as well as a revisiting of the need for this joyful work as a way of making together. Even within HCI, there has been interest in embroidery, not only because of the machines, but because of the practice too. This section of the thesis does not focus on previous work though and theory, but rather on what the leaning into needle and thread practice represented in my own work.

¹³<https://www.feministailab.org/events/symposium2025>

¹⁴Elvia has throughout this process shown me in many ways what relational accountability is. Her values in friendship translated into the agreements we wrote, and in the ways we work together. I am forever grateful our paths crossed so serendipitously. I strongly recommend reading her thesis on voice, power and collective making through sketching [182].

¹⁵A huge acknowledgement to my mum for being so kind and supportive. Making someone feel safe in turbulent times is an achievement! She will likely never read this thesis (maybe for the better), but I know she will always be proud of me! A heartfelt thank you to her brother, my uncle Hugo, has patiently taught me many reasonable and useful things, although I reckon I might have strayed off the path.

¹⁶As I submitted this thesis to print, my grandmother passed away. Both my grandmothers were examples of great dedication to creating the infrastructure that made other people's lives possible. I will always be grateful to them.



Figure 4.3: The banner made at the Aarhus Decennial, hanging in front of the podium where the letters by and to Pelle Ehn were read (more on these letters on section 4.1.2.5).

Embroidery and other textile crafts are a particularly good example of community process over result. Learning how to stitch happened through, by, and to friends, colleagues, and family¹⁷. What mattered for me, here, is the places and modes of making that some of these practices allow. At a WASP-HS conference, I sat at the back of the room. Sitting on the row in front of mine, was a group of three women knitting and whispering to one another. As it turns out, they all worked at the industry with AI systems, but they were all also quite disturbed by it; in particular the forceful implementation of artificial intelligence in contexts that did not need them at all. It might be a coincidence, but looking for those knitting or embroidering in a room has since led me to find clear feminist alignments—as if the practice is a active signifier of that same sensibility.

Whenever I embroider in academic contexts such as conferences or workshops, others approach me in those spaces, and I have stitched a large number of items of cloth-

¹⁷Huge thanks to Kelsey Cotton both for being a friend but also for getting me to care about this.

ing for others during those events. These operate as wearable stickers or illustrations, that often carry similar messages but on the body. I noticed how I tend to embroider more abstract motives as compared to what I would otherwise—not for lack of skill, but because of the connection to the body and the wearer¹⁸

¹⁸We reflect on some of these tensions of visibility and invisibility in self-fashioning [183].

together.

4.1.2.4 Collective Poster-Making



Figure 4.5: Participants gather in the hallway, holding their drying posters before rolling them up to take home.

At the end of the third Nordic Fabulations Network workshop, there were four of us taking turns kneeling on the concrete floor around a pile of papers, enthusiastically rolling black ink into the soft linoleum blocks. During the previous two days, we had drawn and cut pieces of a collective print—making marks and stabbing blocks while listening to a keynote on unmaking. Traces of the previous workshop transpired through the imagery, memories of the witches in Norway. Our joint labour in replacing a printing press with our bodies made possible for participants to take home a poster; a small token of their shared experience. Around us, the rest of the organising team moved tables and vacuum cleaned the floor. As the last participants said goodbye and wrapped up conversations, they also waved around freshly inked prints, devoid of serial number, author, or title.

The context was a series of workshops I was invited to with the intention of starting a new network of Nordic fabulators¹⁹, built on participants with pre-existing established good working relations as well as new early-career members. Through the organisation of three workshops, they produced fabulations that act as possible trajectories for Nordic care futures, along the way developing a toolkit for fabulating that can travel, and reflections on how Fabulation works, what it is good for, and strategies and tactics for developing meaningful shared futures. The first Fabulation workshop in “Concepts”, was focused on conceptual work around fabulations, the second “Approaches”, was on driving fabulation as a mode of designing futures, while in the third, “Interventions”, it was paid special attention to how fabulation might be made more relevant to the “real” world²⁰. The work described here is now part of an article to be published at the local PARSE journal, where I describe it in more detail.

The results out of each workshop were hard to convey and summarise, analysing the growing body of work around fabulations may legitimately challenge traditional academic approaches in its blurring between fact and fiction. Our work in fabulating together went beyond re-imagining technological futures towards arguing for alternative presents that we already know, seeking less complicated solutions and finding at times

¹⁹I thank Pedro Sanches, Vasiliki Tsaknaki, Tom Jenkins, Marie Louise Juul Søndergaard, Jason Tucker, and Laurens Boer for inviting me to this. I have kept contact with all of them since and they have in big or small ways influenced my work since. Extra thanks to Pedro for his constant hospitality, Tom for being a safe space for my cynicism, and Jason for simply being a brilliant mind.

²⁰More can be found here: <https://nordicfabulation.net/>



Figure 4.6: A series of three pictures depicting the scene in the prologue: the making of the posters on the floor at the end of the third and last fabulations workshop.



Figure 4.7: The embodied activity of printing the posters, which involved a number of willing and engaged participants.



Figure 4.8: Photographs of three different offices, one in Malmö and two in Umeå where the posters are hanging.

the evident simplicity. Most importantly, it focused on redesigning our immediate world by crafting material expressions of our common stories. For many, the workshop offered a moment of rest amidst turbulent times. It was an opportunity to lean into storytelling as a means of community-making—to treat fabulation more as a shared space rather than a method. The stories we tell and pass on are fluid and impermanent but fight strongly against technological determinism and inevitability. Within the Nordic Fabulations Workshop, artistic practices became essential to the weaving a tapestry of incommensurable notions. The outcome is inexplicable ideas resonating in the interdisciplinary space between the researchers and practitioners that sat around the metaphorical space of fabulations—the campfire where truth and fact were told together as ghost stories of worlds we want to live in (and partially already live in). By documenting these practices, it aims to make the subtle traces of those imagined worlds a little more tangible—potentially just as those worlds actually are if we just act them into being.

This section seeks to describe the material practices of craft that shaped these workshops, with a particular focus on collaborative poster-making and linoleum cutting as visual methods for fabulation. In the words of Rosner: *“By questioning whose histories, expertise, and knowledges organize design, critical fabulations demand continually reconfiguring those inhabitances. They call on investigators to question the four pillars of a dominant design paradigm (individualism, objectivism, universalism, solutionism) to explore what worlds might be possible in their wake.”* [171, p.118] Critical fabulations is here seen as a method of using speculative storytelling to rework gaps or biases in historical and design narratives, imagining alternative perspectives and possibilities, questioning dominant accounts and surface overlooked experiences by blending critique with creative reconstruction.

After the event, I ended up visiting a number of the participants in their home-towns, sometimes at random, sometimes as the after-effect of the workshops. Many of them had the posters hanging in their offices (see figure 4.8). During these informal chats, I noticed how the stories carried from the workshops to their spaces as a form of prompt towards storytelling. Remarkably, on my latest visit back into ITU, I learned that on a small local event, a group of researchers had taken inspiration from the square poster composition to make their own (see figure 4.9). In the abstract, but “in the small”, this is a clear representation of how fabulations are the telling of tales that are passed along as



Figure 4.9: Photographs of two offices at ITU in Copenhagen where the posters are still on white boards. On the pictures to the right, the method replication can be seen, as well as a small snail also cut during the fabulations network, as a metaphor.

not only futures but enacted practices.

This making has been reported more extensively on in an upcoming publication, but in short, fabulations helped me think through two intertwined figures: patchwork and relational practice. As patchwork, fabulation names a layered and provisional composition of fragments (stories, cuts, tiles, reproductions) stitched together without erasing their seams. Drawing on Haraway’s speculative fabulation [74] and Rosner’s reading of critical fabulations for design [171], the metaphor focuses on how narratives are assembled from partial perspectives, retrieved histories, and embodied labour rather than authored as seamless wholes. The broken-mirror linocut and the Tsuru-inspired tiles materialise this logic: each piece holds its own trajectory, yet meaning emerges only in adjacency, alignment, and overlap. The seams remain visible; misalignments and ink residues become signs of process and care. Much as sensibilities, the idea of patchwork rejects singular authority and predetermined structures, revealing instead that worlds are composed through continuous acts of stitching — “in the small” — where the future is not deferred but threaded into present practice.

Similarly, fabulations operate as relational practices. They are not only compositions of fragments, but enactments of social worlds. The collective labour of kneeling on the floor, rolling ink with our bodies, negotiating the placement of tiles, and carrying prints into offices extends fabulation beyond representation into circulation. The posters become nodes in a network of relations: workshop to hallway, hallway to office, office to new iterations. They prompt re-telling, replication, and reinterpretation without requiring authorship or ownership, echoing the way folklore travels across time and place. In this relational unfolding, fabulation aligns with prefiguration: the mutuality, horizontality, and care desired in imagined futures are rehearsed and materialised in the very act of making together. Fabulation thus becomes neither speculative projection nor finished artefact, but a continuous practice of composing and recomposing shared worlds — stitched, held, and carried forward through collectivity.

4.1.2.5 Correspondence: Pelle’s Epistles

In the spring 2025, I received an email from Pelle Ehn. Naturally, I had to check if it was *actually* addressed to me. It was an invitation to respond to a set of letters he had written during 2025, which were submitted as a critique to the Aarhus Decennial [185].

Called “Utopian Epistles: computing [codesign] crises”, this series of letters to younger generations reflected on half a century of work in participatory design. The text explores how computing and co-design have intersected with broader societal crises, raising questions of memory, democracy, collaboration, and the pursuit of utopian futures. Through this epistolary format, Ehn situated design not just as a technical practice but as a deeply political and cultural endeavour, highlighting both its promises and its limitations. The work ultimately invited readers to imagine alternative ways of designing and living together in times of crisis.

The invitation came in a particular form: a challenge to perform at the conference, pairing a letter with a song read out loud to the attendants. As I started writing, I picked many threads from his references to Marx, but also Hannah Arendt, and even from Sally Rooney’s *Intermezzo* which I had read earlier in the year. The letter became so convoluted and incoherent that I only found one way out. I decided instead to write a series of post-cards purposefully disjointed but telling interlocked stories through time.

The letters were read in Aarhus during the conference. I did not know what the other invited academics would read, but I was excited to know how they had reacted to the same challenge; mostly because I was already familiar with at least some of their work. Pelle started, followed by Shaowen Bardzell, Sanna-Maria Marttila, Erik Sandelin, Ida Larsen-Ledet and finally me. Their letters were a mixture of deeply personal and touching, from funny to quite bleak. As for the song, I ended up picking “Grândola, Vila Morena”, a Portuguese folk song by Zeca Afonso that became the anthem of the Carnation Revolution in 1974. Its lyrics celebrate fraternity, equality, and solidarity, making it a symbol of resistance against dictatorship and a marker of Portugal’s democratic transition.

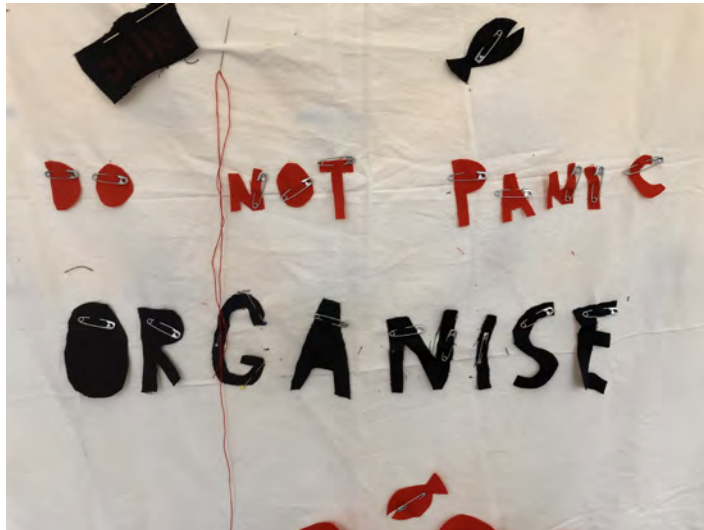


Figure 4.10: A close-up of the “Don’t Panic, Organise” banner with the unfinished needle work and safety pins.

As the outcome of a workshop we had organised earlier in the conference, I had made a banner replicating the last postcard with a message: “Don’t Panic, Organise”. The banner served as part of setting the stage for the reading of the letters. This slogan is a variation of a rallying cry, often attributed to Joe Hill, “Don’t mourn, organise”. The phrase works as a bridge between fear and action, acknowledging the experience of crisis while insisting on collective response. Its endurance lies in its capacity to be copied, repeated and remade across contexts. Each reproduction (whether a placard,

banner, sticker, flyer, meme, or patch) functions as a copy of a copy, but never a simple duplication. Instead, each version is a small design act, a variation that re-situates the message in a new struggle, a new community, or a new aesthetic register. These proliferations are not dilutions but multiplications, demonstrating how the politics of repetition works: each iteration retains a trace of its predecessors, and in the repetition provoking a recognition of a collective movement. In this sense, the slogan is less a fixed statement than a flexible design strategy, its power emerging precisely from its capacity to circulate, transform, and remain legible across feminist, labour, and justice movements²¹.

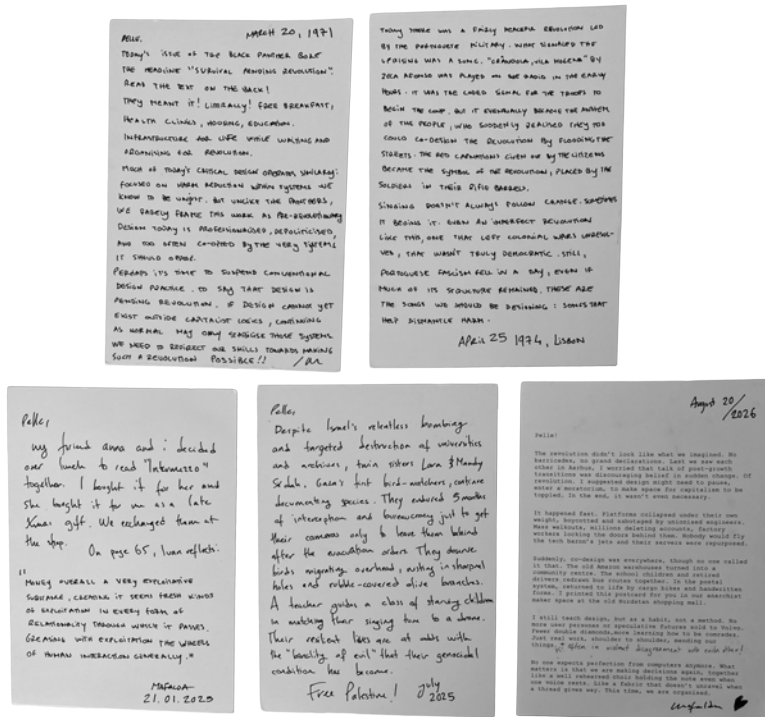
The deep inspiration from Ingold was already embedded into paper and section 3.2, but became here fundamental to understanding what correspondence meant to me [186]. This work continued afterwards as an open invitation for dissent, disagreement, and disillusionment within participatory design as a form of instigation. The reopening towards others is a thread towards seeing the role of designers as recognisers of the part they play in the corresponding damage their processes might be supporting.

Postcard from the Morning of the 25th of April 1974 in Lisbon *Today there was a fairly peaceful revolution led by the Portuguese military. What signalled the uprising was a song. “Grândola, Vila Morena” by Zeca Afonso, was played on the radio in the early hours. It was the coded signal for troops to begin the coup. But it eventually became the anthem of the people, who suddenly realised they too, could co-design the revolution by flooding the streets. The red carnations given out by the citizens became the symbol of the revolution, placed by the soldiers in their rifle barrels. Singing does not always follow change. Sometimes it begins it. Even an imperfect revolution like this, one that left colonial wars unresolved, that wasn’t truly democratic. Still, Portuguese fascism fell in a day, even if much of its structure remained. These are the songs we should be designing: songs that help dismantle harm.*

Postcard from Oakland, March 20, 1971 *Today’s issue of The Black Panther bore the headline: “Survival Pending Revolution”, with a drawing of a woman surrounded by free items and services. A quote from Huey Newton read: “There must be total transformation. But until that time... we must exist. In order to exist, we must survive; so therefore we need a survival kit.” They meant it literally: free breakfasts, health clinics, housing, education. Infrastructure for life while waiting and organising for revolution. Much of today’s critical design operates similarly: focused on harm reduction within systems we know to be unjust. But unlike the Panthers, we rarely frame this work as pre-revolutionary. Design today is professionalised, depoliticised, and too often co-opted by the very systems it should oppose. Perhaps it’s time to suspend conventional design practice. To say that design is pending revolution. If design cannot yet exist outside capitalist logics, continuing as normal may only stabilise those systems. We need to redirect our skills toward making such a revolution possible.*

A Note from Marxist philosopher Antonio Gramsci’s harsh critique in his address to the anarchists in April 1920 *“The socialist conception of the revolutionary process is characterised by two fundamental features that Romain Rolland has summed up in his watchword: ‘pessimism of the intellect, optimism of the will’. The ideologues*

²¹I thank László Sall Vesselényi for having read through these ahead of the conference. But most of all for his unwavering, challenging, nurturing friendship. From a co-teacher to someone I treasure.



((a)) The front of the postcards.



((b)) The back of the postcards. Text can be read below.

Figure 4.11: The postcards (lacking the note from Antonio Gramsci), photographed by Pelle Ehn himself as I forgot to properly document them before being collected in his archive. We have now continued this archive in a new format at the Participatory Design Conference in Milan.

of anarchism, on the other hand, declare that they have an interest in repudiating the pessimism of Karl Marx's intellect."

Postcard from Gothenburg January 21st 2025 *My friend Anna and I decided over lunch to read Intermezzo together. I bought it for her as a late Christmas gift. She did the same for me. We exchanged them at the shop. On page 65, Ivan reflects: "Money overall a very exploitative substance, creating it seems fresh kinds of exploitation in every form of relationality through which it passes. Greasing with exploitation the wheels of human interaction generally."*

Postcard from Gaza July 2025 *Despite Israel's relentless bombing and targeted destruction of universities and archives, twin sisters Lara and Mandy Sirdah, Gaza's first bird-watchers, continue documenting species. They endured five months of interception and bureaucracy just to get their cameras only to leave them behind after the evacuation orders. They observe birds migrating overhead, nesting in shrapnel holes and rubble-covered olive branches. A teacher guides a class of starving children in matching their singing tune to a drone. Their resilient lives are at odds with the banality of evil that their genocidal condition has become.*

Postcard from Gothenburg August 20 2026 – Received September 15 2026 *Pelle! The revolution didn't look like what we imagined. No barricades, no grand declarations. Last we saw each other in Aarhus, I worried that talk of post-growth transitions was discouraging belief in sudden change. Of revolution. I suggested design might need to pause, enter a moratorium, to make space for capitalism to be toppled. In the end, it wasn't even necessary. It happened fast. Platforms collapsed under their own weight, boycotted and sabotaged by unionised engineers. Mass walkouts, millions deleting accounts, factory workers locking the doors behind them. Nobody would fly the tech baron's jets and their servers were repurposed. Suddenly, co-design was everywhere, though no one called it that. The old Amazon warehouses turned into a community centre. The school children and retired drivers redrawn bus routes together. In the postal system, returned to life by cargo bikes and handwritten forms. I printed this postcard for you in our anarchist maker-space at the old Nordstan shopping mall. I still teach design, but as a habit, not a method. No more user personas or speculative futures sold to Volvo. Fewer double diamonds, more learning how to be comrades. Just real work, shoulder to shoulder, mending our things. No one expects perfection from computers anymore. What matters is that we are making decisions again, together like a well rehearsed choir holding the note even when one voice rests. At times, in fierce disagreement. Like a fabric that doesn't unravel when a thread gives way. This time, we are organised.*

These postcards triggered a great deal of discussions which align with the orientations I want to present as the closing of this thesis. Each and every single one of these postcards were nudges to certain sensibilities. For example, the mention to post-growth is not incidental as I was working at the time on an article with Sofia Thunberg²² on the topic [187]. All of these were attempts to make explicit an anti-capitalist orientation in the form of possible alternative economies, and a world functioning with design at and from the margins.

²²A massive thanks to Sofia for being the most wonderful colleague. She was the perfect comrade to meet just at the end of my PhD. Writing with her is a pleasure, and so is singing loudly to Kite!

4.1.3 Pirating

Academic service (peer reviewing, organising, comprising committee work, administrative tasks, student mentoring, and the often unacknowledged emotional and organisational labour that feeds departmental life) constitutes a form of invisible labour that tends to be disproportionately shouldered by women within higher education institutions [188]. Such service activities, though essential to institutional functioning, are undervalued in formal reward structures, relying on expectations of altruistic contribution within academic communities; worsened by the neoliberal reforms of academia (e.g. even where I am active, in Sweden[189]). Women faculty perform a greater share of both low-status and high-status service tasks, in part because organisational norms and relational expectations make it harder for them to decline such work, whereas male colleagues more readily evade equivalent burdens without professional penalty. I became so aware of this issue, that I eventually doubled down on taking even more service on me; as a way of finding out what were the underlying mechanisms.



Figure 4.12: Catherine Wiczorek presenting at Pirate DIS. The work she presented here got later accepted at CHI 2026, and she became a dear friend who I am grateful for.

As noted by Žarkov, one particular problem is the lack of praise or recognition for reviewers. In their words: *“One of the ways in which an academic is expected to engage in the type of ‘knowledge work’ that benefits such universities and guarantees individual advancement within the academic hierarchies is by publishing, preferably in ‘high quality’/‘A’ journals. And in order for a manuscript to be published, it needs to be peer-reviewed. But within such conditions of the neo-liberal academia, where is the space for the reviewer, where is the time and energy for reviewing, where is the understanding of the relevance of reviewing for the advancement of the body of knowledge? The answer is rather simple: close to nowhere”*[190]. In a field that fundamentally relies on collegiality and community engagement, the invisibility and informal allocation of service labour is

an issue.

Despite this need for reassessing academic service, at least in my local case, doctoral (PhD) students' formal degree requirements are typically confined to research milestones such as original thesis submission, examinations, and course credit, without mandated institutional service commitments, meaning that service work is largely voluntary rather than intrinsic to the degree criteria. In this system, a PhD student could complete a degree without any peer-reviewing required. Although many departments encourage broader professional engagement and attendance to departmental meetings is considered in the individual study plan, participation in governance or community events is optional, and not a required component of completing the PhD. I have always found this issue quite problematic. Assuming that a fundamental part of a doctoral degree is to be able to prove the point that we can be part of a community, then pro-community behaviours such as significant peer-reviewing should be encouraged if not mandatory. While I am not ignoring the fact that peer reviewing is a difficult task that requires training, the gender issues mentioned above start early enough to be ignored or not corrected.

After years of a doctoral education I had amounted to more than 170 reviews done, and plenty of chairing and assistance chairing roles for the conferences I published at. I do not posit that my over-prolific tendency to academic service (which comes hand in hand with a recognition that I fit into the stereotype that suffers from relational expectations that make it hard for me to refuse roles) should be the rule, but it rather has been something generously discouraged. I have had to stand my ground on defending the benefit of this work on many levels and occasions. Such knowledge of the inner workings of our community has brought plenty of advantages, obviously at the high cost of a lot of time. Here is where I find the role of design research as highly relational: digging where you stand means putting work into understanding the mechanisms behind where our work is ending up, and having the ability to question and trouble it. Question it I did, particularly when observing excellent work falling through the cracks of standardised, optimised, and frankly quite randomised peer-review processes that have more of a gatekeeping intention than a kind orientation to foster community-support²³.

It is in the context of this large body of service work that I came to organise a bizarre event. In 2025 I had the honour of meeting Chris Speed²⁴ at the Australian Party at the CHI Conference in Yokohama (much can be said about what opportunities are made for whom, and in what contexts, at these social events at the margins of conferences). I cannot fully recollect how the conversation went in the direction it did, but in the mixed frustration between the shutting down of alt.CHI²⁵ and a series of work rejected at DIS, I proposed to Chris to hold a pirate session at DIS with a makeshift stage and PA system where we presented only rejected papers. This conversation was left at that,

²³Not saying here that all peer-reviewing is broken. When done well, it is a generous and constructive gifting practice.

²⁴I thank Chris for all his support and kindness, even later when co-chairing the research-through-design subcommittee at DIS. I have learned so much from many in this particular design community, amongst many others, William Odom, Daragh Byrne, John Vines, and Shaun Lawson; who have included and supported me throughout my PhD.

²⁵At the ACM Conference on Human Factors in Computing Systems (CHI), alt.CHI refers to a defunct alternative and experimental track that provided a venue for provocative, unconventional, and exploratory work that challenged dominant formats within human-computer interaction (HCI). It was intended for research that may not fit neatly within traditional empirical or methodological frameworks, including fringe, critical, speculative, reflective, or artistic contributions. alt.CHI embraced creative presentation styles and an open review system, valuing risk-taking and critical engagement over conformity to established norms, and it has played an important role in creating a playful space within the HCI community. It got phased out between 2025 and 2026, leading to a number of initiatives attempting to revive it.

until I got a text message from him about a week before DIS 2025 was due to happen in Madeira, Portugal.

We quickly put together an event called Pirate DIS: an unofficial, unsanctioned²⁶ side event to the ACM DIS (Designing Interactive Systems) conference. It was conceived as a “pirate” showcase for work that had been rejected by the standard peer-review process or didn’t fit into the official conference categories, offering ten researchers the chance to present papers, pictorials and works-in-progress in short, informal presentations. In our words: “No AC’s, no committees, no barriers. Just show up, share your work, and join the mutiny against conventional academic gatekeeping.” The event was held in the basement of a bar, with a makeshift stage, a terrible projection on a stolen tablecloth. The session was rowdy and engaging, with calls for walking the plank, but mostly supportive encouragements for resubmission. The feedback was unstructured but generally kind, and the participants seemed to quite enjoy presenting and attending.

The reclaiming of conferences and other academic spaces as our own, as events made of their own participants is a possible form of academic service. Creating spaces for alternative or non-formal relationships with knowledge is part of dismantling the exclusionary premise of academia. Alongside the importance of supporting public outreach, in a context of “digging where we stand”, design is a discipline that knows how to create small pockets of resistance that allow the questioning of the tenets it is operating under.

The organisation of this event was meaningful to me as a resistive type of academic service. While there may be many, it became the starter to considering design research as a form of pirating, of occupation of spaces, of re-routing of resources. At the time of writing this thesis, Chris and I are preparing another version of this event at the Design Research Society conference. These overlapping ideas of refusal, fabulation, and pirating, led into the next section on framing design as pre-revolutionary acts.

²⁶Well, against the concept, it was eventually sanctioned and advertised on the main website (<https://dis.acm.org/2025/>).

4.2 Two Paths Forward: Design as Pre-Revolutionary Acts

Inspired by the prologue to this section, and as the outcome of committing to refusal as a sensibility, I converge at considering design as pre-revolutionary—meaning considering design practice as contributing to the groundwork that makes collective transformation possible. **This means designing with the explicit intent of labouring towards revolution. This pre-revolutionary mode can take many shapes: from instigation to potentially the suspension of design work unless it operates under post-capitalistic conditions.** I suggest designers can focus on designing tools that make revolutionary acts possible and accessible—this for example through making co-operative economies easier to enact and sustain. This pre-supposes the role of design not primarily as serving market novelty or professional distinction, but becoming instead a site of shared sensibilities: a way of rehearsing different ways of being together, circulating messages, and making space for alternatives at times through strike, inaction, or even the explicit work towards making revolution possible. The relational sensibilities explained above could lead to many paths forward, these are two I could imagine.

One might wonder why the turn towards a need for revolution rather than a focus on reform as design historically has helped through co-design and the focus on sustainable transitions. It might seem appealing to hope for legislative changes and the peaceful support of gradual change. But in the words of Rosa Luxemburg²⁷:

“That is why people who pronounce themselves in favour of the method of legislative reform in place and in contradistinction to the conquest of political power and social revolution, do not really choose a more tranquil, calmer and slower road to the same goal, but a different goal. Instead of taking a stand for the establishment of a new society they take a stand for surface modifications of the old society. If we follow the political conceptions of revisionism, we arrive at the same conclusion that is reached when we follow the economic theories of revisionism. Our programme becomes not the realisation of socialism, but the reform of capitalism; not the suppression of the wage labour system but the diminution of exploitation, that is, the suppression of the abuses of capitalism instead of suppression of capitalism itself.” [191]

As noted, design has been fundamental to the propagation of the abuses of capitalism. In most of its commercial forms, design is at the service of profit. Although it might be easy to perceive design as a democratic practice of tuning into societal needs, the point always returns to who owns the means of production of the designed goods. Arguably, design tries to better understand and define what are the requirements of society. Back to Rosa Luxemburg:

“Capitalist production has this in common with all other historical forms of production, in spite of fundamental differences between them. Objectively it has to fulfil the material needs of society, although subjectively only the profit motive matters. This subjective aim can only be reached so long as capital fulfils its objective task. The goods can be sold and the incoming profit turned into money only if these goods satisfy the requirements of society. So the continuous expansion of capitalist production, i.e. the continuous accumulation

²⁷Yes, Michael Heron, I have not yet given up, capitalism has not yet won. Michael has, for all these years, been a companion in joyful disagreement. I could not imagine a better friend and a more inspiring academic. I look up to him, in his humour, but mostly in his ability to make others feel seen.

of capital, is linked to the equally continuous growth of social requirements. But what are the requirements of society? Can they somehow be more closely defined, measured, or must we depend only on this vague term?" [191].

However, in this chapter, I suggest that designers are ill equipped to tackle what they define themselves as wicked-problems. Focusing away from individual capital seems to be a struggle in a discipline still appended to industrial design. But societal needs require the shift away from the individual. What might be suitable however, is—as traditionally done within design processes—to focus on one particular group or activity. Here, I propose tools for revolutionary or instigatory action as that aim.

In short, this section grapples with the consequences of fostering and allowing space for specific design sensibilities to grow and exist. Based on stories and fragments of my PhD journey, alongside examples I found in the process, it argues that if we are to fully take sensibilities seriously, we will also have to deal with the possible work they foreclose, including addressing the issues design is haunted with. Obviously, I must now address what happens in the recognition of what I would consider harmful sensibilities (see, pro-capitalistic, neo-liberal, imperialist). As it might be obvious, this section is written to the reader who can recognise themselves in my writing up until this point—and quite likely also the reader that knows me personally. As allured in the introduction, this means I make my arguments open for contestation by those with similar or different sensibilities. This is a welcome intervention: what I propose is fragile and dependent on others, and clearly in opposition to many other views of what design should and can do. A reviewer for Article 7 (see section 3.4) pointed out that they would like to see a reflection or speculation on how to handle design sensibilities originated in Silicon Valley. The argument here is that, indeed, we should make that account as such accounts make those sensibilities possible to contest. An example of this is the highly resisted Alex Karp's Palantir Manifesto published on X earlier this year²⁸. This manifesto was deeply contested precisely because it was so clearly articulated.

Built on the sensibilities that I have made explicit up until this point, I hope the effect of articulating sensibilities also can open for alignments in intentions. **Design pending revolution paints a future for design hinged on collective action and pollination.** Hence in this section I propose two orientations for design building on a sensibility of collectivity, troublemaking, and instigation: design as creating the infrastructure of revolution by engaging or a design moratorium by refusal. In short, either one admits design is deeply political and must engage with the worlds it is building, or admits a partial role but no direct action possible, and withdraws. The first pulls design to one extreme in creating conditions for revolution, and the other considers instead the complete upholding of design action collectively to make space for other actions.

²⁸<https://x.com/PalantirTech/status/2045574398573453312>

4.2.1 Instigation

Critical design has tended to place disproportionate emphasis on individual acts of disruption—the lone (critical) designer, the speculative provocation, or the singular “troublemaker” artefact—often celebrating these figures as catalysts for change through adversarial making (see, for example, the work of Dunne and Raby[192], [193]). While such work is valuable in revealing tensions and opening debate, it is less effective at accounting for how dissent operates collectively and at scale. In particular, design scholarship has struggled to theorise forms of action that spread through imitation, adaptation, and informal networks rather than through centralised organisation or fully structured movements. These processes of collective uptake (what might be described as pollination rather than coordination) are crucial to understanding how design interventions persist, travel, and accumulate force beyond their initial context. As a result, the field risks overlooking how design can enable collective agency, focusing instead on isolated moments of critique rather than on the dynamics of shared, evolving resistance beyond critique.

Critique and instigation differ primarily in their orientation towards action. Critique is concerned with analysis, exposure, or questioning of existing conditions; often operating retrospectively or diagnostically by making power relations, ideologies, or injustices visible. Instigation, on the other hand, is oriented towards provoking events, behaviours, or conflicts in the present. To instigate through design is to actively set something in motion. In an academic sense, instigation aligns with traditions in critical design and agonistic theory that prioritise dissent, friction, and disruption as generative forces. Instigatory practices deliberately create conditions for contestation and agonism rather than consensus, inviting publics to take positions and act within a field of disagreement. Instigation therefore operates performatively: it introduces an object, gesture, or intervention that unsettles the status quo and compels a response, whether from institutions, authorities, or citizens.

Design research has also largely refrained from engaging directly with questions of violence, tending instead to frame political engagement in terms of dialogue or speculation rather than confrontation or force. Within critical and speculative design traditions, conflict is often aestheticised or rendered symbolic, distanced from bodily harm, coercion, or material damage [193]. This reluctance is partly ethical, but also methodological: violence is frequently treated as an external failure of politics rather than as something embedded within infrastructures, borders, policing, or design decisions themselves. Colleagues such as Carl DiSalvo note that even adversarial design often remains within “safe” forms of contestation that stop short of acknowledging how power is ultimately enforced [194]. More recent work has begun to challenge this omission. Mahmoud Keshavarz argues that design is deeply entangled with everyday and structural violence, from migration systems to bureaucratic controls, and that ignoring this entanglement risks reproducing the very harms design claims to oppose [195]. Similarly, Fry and Nocek situates design within longer histories of colonialism and ecological destruction, framing design as both a producer and mediator of violence at planetary scale [196]. These perspectives suggest that design’s hesitation to address violence a political positioning rather than neutrality: one that limits how fully the field can grapple with power, resistance, and the material conditions under which collective action unfolds. In fact, most solution oriented design in the West has caused incredible and undeniable violence elsewhere. It might be worth taking inevitability of certain violences to be embedded into design action in a manner that brings harm to the limelight.

This is not to be read as an encouragement for mindless violent upheaval, but instead a call to at least discuss what design research would look like if explicitly violent towards proponents (companies, organisations, individuals) of the systems that hold planetary health hostage. I joke often that we should be concerned with designing the next generation Molotov cocktails, but what I mean in fact is that designers do have the competence for making artifacts that can be used for resistance. There are plenty of examples of design that is arguably aiding the making of democratic movements; and potentially tools for revolution. But often these tools are not well designed enough to be able to become widely used.



Figure 4.13: Chaz Hutton's Multipurpose Anti-Fascist Street Furniture. Used with permission.

On the 29th of June 2025, Chaz Hutton²⁹ posted an image on Instagram. It portrayed a bench design that could be used as a barricade. The text read:

After seeing some public seating repurposed to create barricades in LA last week, I started thinking about 'hostile design' and how those horrible antisocial design features could be used against the same kind of mean attitudes and policies that implement them. And so, I've dusted off my old archi design skills and drawn up a multipurpose anti-fascist public bench. Often, spikes or

²⁹<https://chazhutton.com/>

mid-bench armrests are applied to surfaces to discourage people from sleeping in certain areas, (usually a new high-end development)—in this case, I’ve taken those spikes and faced them to the ground, on one hand a symbolic anti hostile-design gesture, and on the other hand a useful deterrent against a vindictive and militarised police force when these benches are turned on their end, lashed together, and repurposed as a civilian barricade. The large backing design ensures that when positioned on their ends, the tipping point remains on the protester side, so that the defensive structure can not simply be pushed over. Meanwhile, protesters applying weight on the same element stop the barricade from being pulled forward. Holes along the bench surface serve to drain water during wet weather, or while in barricade mode, become a kind of medieval arrow slit. Latches and corresponding holes on each edge of the bench work together to clip multiple benches into place. These same holes and the backing elements also provide hand holds in order to move the benches, which are deliberately heavy for two reasons: 1: As an effective and immovable barricade element, and 2: Any moving and repurposing requires the teamwork of multiple people with a common goal. In this particular drawing I’ve coloured the bench a coral orange, but ideally it should be painted rainbow just to upset the fuckers even more.

In Lisbon, an activist collective called *Infraestrutura Pública* argues that citizens are losing basic rights in public space, and likens their campaign to a “trilogy of rights”: the right to sit, the right to free public toilets, and the right to water. They point out how benches and seating have been removed (for example during the pandemic under the guise of social distancing), public toilets have become paid, hard to access, or frequently out of service, and drinking fountains have been shut off or neglected—even when they are historic monuments. They often post on social media with examples of what they call an archaeology of public infrastructure that has been removed. At times, this infrastructure is made inaccessible by design, and through design.

As a form of protest, the group has done actions like serve free water in front of a dry fountain in impoverished urban areas such as Intendente³⁰ to highlight the importance of water access, and have used portable toilets in public space. Overall, the group’s argument is that what they are asking for is not extraordinary—just rights that once existed and should still be standard: to sit in public space, to relieve oneself, to access drinking water freely³¹.

In many of their actions, they give visibility to how bus stops have been built without seats, replaced instead by mere “leaning backs” (*encostos*), leaving many waiting passengers standing—some for over 20 minutes. They responded by constructing and installing wooden benches using leftover timber and local carpentry skills. The improvised bank was used continuously throughout the day, especially by people with mobility difficulties, and sparked surprise, gratitude, and public discussion. The city’s concessionaire, JCDecaux, later claimed that the choice of leaning-backs complies with accessibility and legal norms set by the municipality. After persistent action and symbolic pressure, the leaning-backs at those stops were exchanged for full seats once again³²—showing how small design interventions can catalyse civic change and debate. The problem

³⁰<https://www.timeout.pt/lisboa/pt/noticias/a-nossa-luta-pelo-espaco-publico-e-uma-trilogia-de-direitos-a-sentar-aos-sanitarios-e-a-agua-030424>

³¹See, for example, their map of public toilets: <https://lisboaparapessoas.pt/sanitarios>

³²<https://amensagem.pt/2024/11/21/banco-madeira-paragens-autocarro-lisboa/>

is not exactly solved, and this collective still places conventional chairs on stop as a provocation from time to time, only to see them removed by JCDecaux after a while.

Curiously, JCDecaux is such a large company that it has also become a recurring focus for organised artistic and activist critique. One prominent example is *Brandalism*, an international activist art collective that intervenes directly in outdoor advertising spaces to question corporate power, consumerism, and the privatisation of public visual culture and infrastructure³³. Rather than staging conventional demonstrations, *Brandalism* replaces commercial advertisements—often in bus shelters and street furniture operated by companies like JCDecaux—with critical artworks and messages produced by artists. These actions are usually carried out covertly and temporarily, mimicking the visual language of advertising while subverting its content. JCDecaux's prominence makes it a frequent target: its infrastructure is highly visible, embedded in everyday urban life, and emblematic of how public space is monetised. During events such as the 2015 Paris climate talks, *Brandalism* famously replaced hundreds of JCDecaux adverts with climate-critical works³⁴. In their manual, they even note: “During our Cop21 project in Paris, one of our female teams was stopped by a JCDecaux worker who asked if they had permission to change the ads. They said “yes, of course” and he proceeded not only to show them a more efficient way of installing the posters but also gave them a tool from his van to make it easier.” In this way, *Brandalism* treats advertising infrastructure as a contested site where political, economic, and social values are continuously negotiated subversively through design. Their manual gives clear instructions to others on how to behave and conduct their own *Brandalism*³⁵.

These are examples of what could be still be called adversarial design [194] operating in practice, purposefully challenging dominant socio-political structures, often by creating artefacts or systems that provoke critical reflection or resistance. Such practices encompass both overtly resistant strategies (such as encryption tools that counter surveillance) and subtler interventions, like urban installations that question spatial inequalities. In this sense, adversarial design not only produces objects but also curates spaces for contestation and debate. However, these spaces must be occupied at scale, and likely in a framing that considers creating the infrastructure and tools for possible revolution.

To think of design as pre-revolutionary would mean understanding it not only as a tool for resolving problems within existing systems, but as a practice concerned with preparing the material, social, and imaginative conditions for systemic rupture³⁶.

It is an emancipatory move for design as a way of knowing that might encourage revolution directly; operating in the anticipatory space where norms are unsettled and infrastructures of dissent are made widely possible and enactable. Pre-revolutionary design would attend to how objects, services, and environments can support collective readiness for something else entirely: by normalising alternative ways of organising life and economics, exposing latent conflicts, and lowering the threshold for participation in

³³<https://brandalism.ch/>

³⁴<https://brandalism.ch/projects/cop21-climate-talks/>

³⁵<https://brandalism.ch/take-action/>

³⁶In this thesis, while I do not go into detail with the systems I might be aiming at, the issue can be pointed to the root cause—capitalism. But to return to Rosa Luxemburg herself notes, the deeper issue is imperialism: “The typical external phenomena of imperialism: competition among capitalist countries to win colonies and spheres of interest, opportunities for investment, the international loan system, militarism, tariff barriers, the dominant role of finance capital and trusts in world politics, are all well known. Its connection with the final phase of capitalism, its importance for accumulation, are so blatantly open that it is clearly acknowledged by its supporters as well as its enemies. But Social Democracy refuses to be satisfied with this empirical knowledge.”[191]



((a)) A bench built by Infraestructura Pública in use.



((b)) Close up of the built benches by Infraestructura Pública, placed under a leaning back.

Figure 4.14: Images from Infraestructura Pública and their built benches as resisting, instigatory acts.

moments of upheaval. Design as instigation is a real world practice beyond speculative critique and towards the cultivation of capacities: for coordination, resistance, mutual aid, and refusal. Importantly, this does not imply an aestheticisation of revolt, but a sober acknowledgement that material arrangements shape what forms of political action are possible when historical conditions shift—even if at times through violence. In this sense, design becomes less about imagining preferable futures and more about equipping society for the uncertainties, risks, and confrontations that precede profound social transformation.

A possible metaphor for design instigation can be found in the role trade unions play before, rather than during, moments of collective action. Unions rarely create discontent from nothing; instead, they activate latent grievances, translating diffuse frustration into shared awareness, organisational capacity, and readiness to act. Instigation is less like issuing a command and more like striking a match in a room already filled with combustible material. The match does not determine the size or direction of the fire, but it makes ignition possible. Design now, ought to be about what matches we might need.

In trade union contexts, instigation takes many forms: circulating a petition that reveals how widely a problem is shared; holding workplace meetings that test collective confidence; or calling a consultative ballot that does not yet mandate a strike but makes conflict visible and measurable. These acts are instigatory because they provoke response (discussion, alignment, resistance from management) without resolving the situation themselves. Design research can support such instigation by shaping the material and communicative tools (see examples above in the form of stickers or wearable protest) through which collective readiness is built by creating conditions in which collective agency can surface, spread, and scale: much as union instigation turns individual dissatisfaction into the possibility of coordinated action. Design is uniquely placed here, as it can make pre-figurative worlds tangible such as in the examples given above. Within academia, that means less segmentation of design and design insights, and instead a turn towards collective agency and shared sensibilities that can make revolutionary work possible beyond its own walls.

4.2.2 Moratorium

If pre-revolutionary design imagines itself as a match in a combustible room, a design moratorium instead asks what might happen if we collectively put down the matches and pause entirely. A moratorium does not mean abandoning engagement, but rather intentionally refraining from producing new artefacts, interventions, or solutions, creating temporal and spatial gaps in which other forms of social, political, or collective action can take space. This is a different form of instigation or provocation. A moratorium is about suspension: a deliberate collective withdrawal from intervention to lift forward the capacities of others or halt harmful developments³⁷.

In the moratorium, design research becomes an exercise in restraint, attending to what existing infrastructures, communities, and practices already make possible. By halting the continuous production of objects or proposals, design can amplify the agency of actors who occupy these spaces, making their interventions legible and supported without being overwritten by expert-designed artefacts. This is analogous to ecological fallow periods in agriculture³⁸: letting land rest so that the soil regenerates, biodiversity flourishes, and future crops can grow more resiliently. In social and political terms, a moratorium creates a pause for reflection and non-designed forms of coordination; allowing informal networks, grassroots practices, and emergent tactics to penetrate the space left by absent interventions. Fundamentally, this would free up time for designers to support and feed these networks instead—in short, it would allow for other sensibilities to come forward.

A design moratorium also confronts the ethical and political assumptions embedded in habitual design practice. By suspending action, researchers and practitioners can critically observe the power dynamics that normally structure public, digital, or institutional spaces. It asks questions such as: whose voices and actions are displaced or quieted by design? Which material infrastructures or social relations are overshadowed by new artefacts? And most importantly, what kinds of agency can recover when design steps back? As a methodological stance, a moratorium positions design as a facilitator rather than a driver, recognising that new is not always synonymous with progress.

One can imagine the moratorium as opening space for loitering: the act of lingering in a public place without an obvious purpose; and a notion that I am enamoured with. It is often treated negatively in law and policing, especially when associated with antisocial behaviour or perceived lack of legitimate reason to be in a space—which is an exclusionary thought. Loitering (or just hanging out) is significant because public spaces are frequently organised around productivity and consumption. In many capitalist societies, especially urban environments, people are expected to be either working, consuming, or moving through space efficiently. Simply occupying space without spending money or appearing productive can therefore be viewed as undesirable or suspicious; although that is fundamentally what most well functioning cities allow. This reflects how capitalism has taken a hold of public spaces by prioritising certain forms of economic activity, while limiting non-productive uses of space and shaping who is considered “acceptable” in those environments. In this suggestion for design practice,

³⁷Just as I wrote this text, Bernie Sanders and Alexandria Ocasio-Cortez introduced a bill for a federal moratorium on new AI data centres until safeguards exist. Many others, including activist movements like ‘Stop the AI Race’, ‘Pause AI’ call for similar halts.

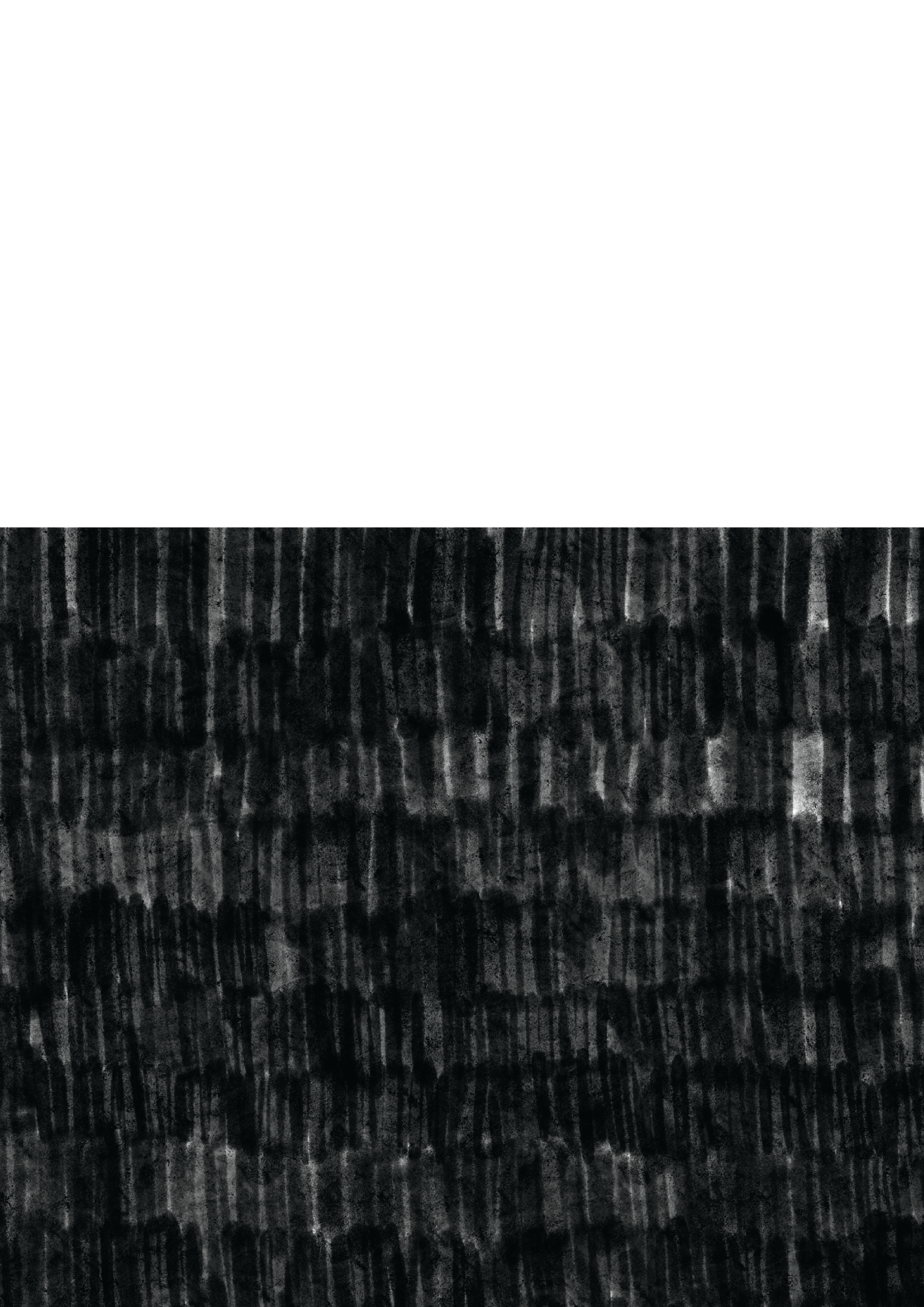
³⁸Even regenerative farming and permaculture includes periods of fallow, Sebastian Prost assured me. He has, in the latest season of my life, created a shelter for me full of tenderness and love to finish this thesis through stormy weather: a refuge where we both will remain together through many winters to come.

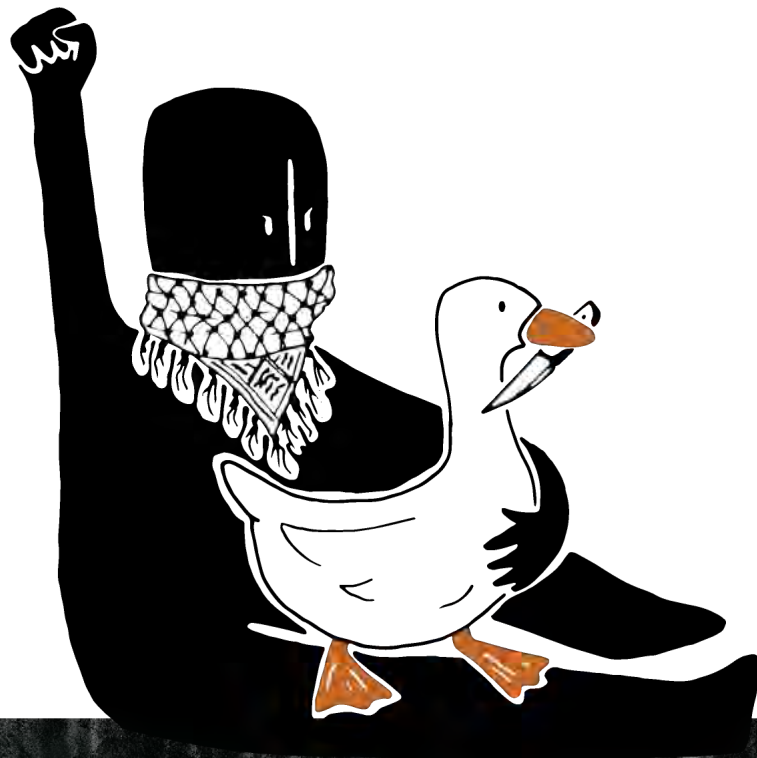
I propose imagining what would happen if design practice turns fundamentally into (non-productive) loitering together, at scale. Designing our occupation of the space of non-design as a collective move.

Thinking design as a collective standstill strategic refusal rather than passivity: a way to make space for the capacities, conflicts, and creativity of others. It reframes design's role from shaping outcomes to shaping opportunity, from imposing form to enabling emergence, and from instigating change to supporting the conditions under which change can autonomously arise. In combination with other instigatory or pre-revolutionary approaches, a moratorium reminds us that design's possibilities lies as much in what it does not do as in what it produces.

This notion is building on the already extensive work on refusal mentioned in section 4.1.1. The distinction here is that the moratorium relies on scale; a coordinate movement from a large body of designers. This is where the idea of instigation plays a role. Dissatisfaction with capitalist, exploitative, and extractivist orientation of design; the growing sensibility towards wanting to detach design from these values; is a space that is breeding the possibility for large scale action. Here, I attempt to portray such thinking as fabulatory for design practice and research itself.

Imagining a complete standstill of design work might reveal the possibility that design, in many contexts, may not be strictly necessary at all. Such a pause would create the temporal and material space for designers to step out of the role of constant producers and instead participate directly in social movements, mutual aid, and community-led initiatives. While this could entail the partial suspension of design as a discipline—its own deliberate dismissal—the space created by that withdrawal is itself generative and instructive. By stepping back, design reveals what emerges when its usual interventions are absent: alternative forms of coordination, collective problem-solving, and civic creativity that do not rely on professionalised expertise. This is not a dismissal of design as a capable discipline, but instead yet another example of where a design sensibility can be and will be carried elsewhere by designers. In many ways, the moratorium might function only for capitalistic purposes to refocus on alternative makings, different economies, and cooperative functioning. The moratorium is meant to show both the limits and potentials of design by allowing other forms of social action to flourish in its place.





Chapter 5

Conclusion

A turn to sensibilities is a shift in what matters for theory and practice in design epistemologies; making the designers themselves a site of knowledge, alongside their institutions and comrades. Design research—in particular in the space of education—plays a role in embedding itself in the makings of the worlds we live in. While in this thesis, most of the work has been in the crafting of critique and spaces for resistance, other sensibilities will open different spaces.

Sensibilities, as articulated throughout these pages, are not merely personal preferences or individual dispositions, but situated and relational ways of attending to the world through design. They are co-constructed through lived experiences, collaborations, political commitments, theoretical encounters, and everyday acts of making, gradually shaping how we (designers) perceive, interpret, and respond to the conditions around us. A design sensibility therefore constitutes both a way of knowing and a way of *becoming*; it informs what is noticed, what is cared for, what is refused, and what kinds of futures are considered and made possible everyday. They become a form of corporeal theory that does not exist prior or separate to practice: sensibilities are continuously formed and transformed through engagement with others and with the socio-material realities design inhabits. To consider and articulate sensibilities is thus to recognise that design knowledge is always situated and entangled with the worlds it participates in producing; including the researchers/designers themselves alongside all the relationships they establish in their work. Weaving in sensibilities is a matter of concern to everyday design, especially when they also become commitments between people. A value-driven approach can be enforced top-down, at risk of becoming perfunctory unless it bridges towards the corporeal. This relational dimension of sensibilities that distinguishes them, nudges this form of epistemology away from abstract knowing, resisting an easy scalability and relying more on pollination and interconnectedness. These are values strongly aligned with alternative economies than with capitalism. Hence it is less important to sensibilities how they scale, but instead how they are fostered and passed on at a more local level, horizontally.

Importantly, the call to consider corporeal theories is a stance against a common understanding of theoretical work: of operationalising theories as lenses for analysis, or engendering them as abstract entities to be extracted. The very notion of intermediate level knowledge within which I place sensibilities is problematically arranging theory as abstract and hierarchically above ultimate particulars. Most other forms of intermediate knowledge are still attempting to at least partially detach or abstract from an enclosing envelope of either designers or artifacts (or any other post-human agents)¹. Instead, the

¹Perhaps at the exception of annotated portfolios, which are mostly a conversational form of presenting

notion of theory as a skin entangles theory and practice and situates it within the bodies of design researchers, making the fast extraction of abstract knowledge near impossible—relying instead on slow pollination and careful making of knowledge heirlooms. If we are vessels, carriers, and transmitters of valuable theoretical knowledge, then let that be a call to treat one another with the accountability and respect that knowing entails with the need for a relational approach that acknowledges that skins can hardly be faked or easily shed.

As I wrote this closing chapter, I looked back into the path that took me here. It was not until the very end that I realised that my master thesis in Architecture was entitled “Learning Architecture Technique and Sensibility: from the University to the Office”. I had not read this thesis in years. In the opening chapter from 12 years ago, I wrote: *“This volume includes a great number of different topics intertwined and related and it does not follow a strict logical line. It can be described in a very concise manner as a research on architectural variables, programmes and typologies and their impact on contemporary architecture (technicalities); and moreover, how this reflects on the discipline, on the students, the professionals and the role of architecture in contemporaneity (sensibilities) through the design of two very dissimilar buildings in order to support further investigation on alternative methodologies for studio programmes.”* On the surface, I seemed to have changed very little. But in retrospect, I can now see how I have come much closer to understand what I meant with sensibilities in the first place.

What has changed is my gradual transformation, built on an anarcho-poetic early seed, from a hopeful view of design towards a more sceptical one. This change in sensibilities, from a tentative hopefulness to explicit subversiveness is at the core of understanding theory as lived. Still as of today, I think probably the most useful design I made during my PhD was a collection of banners for the pro-Palestinian student encampment in Gothenburg (see figure 5.1). What is particular about it is that it required my presence *in situ* (a fundamental part of activism), but it also lived beyond me, was re-used and appropriated; while still remaining a symbol of an agreed commitment. I find a thread between these banners and the many of the other small design moves I describe as refusing, fabulating, or pirating; they are relational subversive moves that are relational to the point where individual ownership is no longer possible.

Perhaps this journey needed to pass through drones and the rejection of their inevitability; or fundamentally the realisation of my failure on the perspective I chose to take. If I had been capable of fully committing to my activist sensibilities, this is where I should have gone first. But this journey of there and back again² may have served a purpose of clashing, of push and pull against the sensibilities. Honing them is not only about alignment, but about difference and frictions. Acknowledging and articulating sensibilities can both be a form of creating close connections, but it should also come with the intention of keeping the boundaries porous. This is—for me—the premise of design and it should keep that premise at the core of whatever knowledge it is producing.

The work in this thesis has affected and been affected by others, and the path forward

design work, keeping the theory close to the particulars.

²‘There and back again’ is part of the title of ‘The Hobbit’ and Bilbo Baggins’ own title to his memoir of the Quest of Erebor. He eventually returned home with a lot of new, strange ideas. In the opening of the ‘Fellowship of the Ring’, another hobbit describes Bilbo’s home (Bag End’s): “Ah, but he has likely enough been adding to what he brought at first,” argued the miller, voicing common opinion. ‘He’s often away from home. And look at the outlandish folk that visit him: dwarves coming at night, and that old wandering conjuror, Gandalf, and all. You can say what you like, Gaffer, but Bag End’s a queer place, and its folk are queerer.’ May our shifting sensibilities be about bringing home queerer folks.



Figure 5.1: A picture of one of the banners we made for the Gothenburg pro-Palestinian student encampment in Gothenburg, contesting Gothenburg University and Chalmers University of Technology's collaborations with Israeli universities.

is equality dependent on other people; particularly in finding the necessary myriad of forms in which sensibilities can be articulated and recognised. As an anonymous reviewer in the last paper pointed out: *"I appreciate that the paper attempts to articulate an aspect of design research that often is so difficult to articulate, and to challenge what otherwise might be dismissed as 'oh, but this researcher comes from <fill your discipline/degree/school/venue in here>'. As I read the paper, it is about going beyond a simple position statement and being attuned to historical trajectories that dynamically led to what is attended to and bring to the foreground in design research that otherwise might be hidden assumptions or sensory attentiveness."* It is the filling-in that now requires the work of others, in other places, and divergent contexts. My concern with what sensibilities are welcome or excluded in particular design programs is a matter of accountability. This path ahead can only be trod by a community of designers willing to articulate where they come from and where they are headed; and in that articulation, to evaluate what we are leaving as seeds for the generations to come.

Attending to sensibilities is profoundly political, particularly when considering the tensions that their explicit accounts ought to surface. When sensibilities become commitments, they make comradeship and alliance easier, but they equally make certain paths impossible, and potentially collaborations difficult. Because I arrived at that point, at the closing of this thesis I propose two controversial paths forward for design: design as instigation or as moratorium. They function as provocations to think-with on questioning the assumptions within design, troubling our role as contributors to solutions or fundamental cogs in the machinery of capitalism. These two directions

oscillate between an overt and implicit political agenda, but they are a representation of relational sensibilities within design that will hardly resonate with everyone. This clash is by design, and represents an opening to discuss what we, as designers, may want our discipline to play as a role and be accountable for in the world. Similarly, we should strive to make the conditions for these sensibilities to thrive and spread.

This issues future work in a continuum of reflection and action in what we carry and what we pass on as heirlooms. The collection of examples from my practice throughout these years are stories of what I hope might inspire others to do, in the way that I was inspired myself. They exist and were co-created in a network of relationships. Navigating and caring for those networks is a core component of the articulation of sensibilities; a practice in itself that requires space and time. It is less similar to the consistent weaving of a tapestry, and is instead closer to patchwork that exposes its seams and its visible mendings.

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