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# DRS 2024 Ph.D. Consortium

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# DRS 2024 Ph.D. Consortium

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## Introduction

It was a wonderful experience organizing the 2024 DRS PhD consortium. Hosting such a diverse set of expert individuals meant preparing opportunities to develop lasting skills and create connections amongst early career researchers. As PhD students ourselves, we learnt much from creating this experience and we hope it supports future organizers in preparing such a meaningful event.

We received approximately 100 applications to attend the PhD Consortium, but due to space and time restrictions, we decided to limit our numbers to around 50 participants. All papers were assigned keywords and distributed among five reviewers who read and ranked them accordingly. Through this process, we selected the top 50 applications based on the quality of their submission (i.e. written quality, detailed discussion of topics) and alignment with other applicants. Online participation was not allowed, and not all candidates could attend in the end. In total, we hosted 37 students. Upon reviewing the applications, we organized individuals into different sub disciplines and aimed at having a diverse regional representation. We found four emergent clusters of individuals centered emergent technology, policy, social, and environmental, in design research.

Individuals were at different stages of their PhD degrees and came from different regions in the world. Before the event, participants had to prepare concept maps in which they outlined their research, highlighting methods, topics of interest, and current research questions or motivations. This was meant to help Consortium participants familiarize themselves with one another's work and as a first step in the Consortium Day activities.

The first day of the Doctoral Consortium, opened things up with a keynote by Professor Laura Forlano. The discussion meant to elicit the often unspoken knowledge that one gains via their PhD experience. The talk was illuminating and inspired career prospects for a design research PhD. The next part of the day focused on a number of activities in breakout groups formed from the clusters that emerged during the review process. Each breakout group had

a mentor, an experienced researcher that served as a co-facilitator of all the activities. The goal of the first breakout session was to have students develop a three-minute pitch of their research which they could utilize throughout the conference. The first session was meant to address the challenges that PhD researchers often experience in communicating their work to a broader audience.

The second session focused on developing a 500-word extended abstract. Participants had to use their concept maps and results from the first session to develop a summary that included key points of their research project. The mentors discussed the key points that needed to be covered in such a document, helping students develop a comprehensive outline to be included in the DRS Digital Library. A goal for this year's organizers was to implement a standing tradition of recording and tracking past participants of PhD Consortiums. Since a student will mostly attend the Consortium once, given the biannual nature of the conference, we hoped to establish a document which can be referenced and highlighted to follow design researcher's pathways. All participating students were given two weeks after the conference to complete their abstracts to be included in the compendium.

We concluded our day with a keynote discussion by Professor Frederik Van Amstel who discussed how every doctoral design researcher must go through the existential crisis of not knowing for a while if that daunting research actually makes any difference in the world. Frederick reflected on his own trajectory and that of others and concluded that such crises are the manifestation of deeper contradictions that deserve investigation. Frederick closed the session with an activity using the 'Crisis Deck' a tool that can be used to meet and discuss with people undergoing similar crises.

It was an honor to organize this year's Doctoral Consortium and we thank the Design Research Society for trusting us in hosting this day. Thank you,

From your organizers:

Ryan Bruggeman
Alayt Issak
Jules Rochelle Sievert
Luis Garcia
Michael Arnold Mages

# Table of Contents

## Jeremy D. Faulk

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### *Designing positive practices that support sustainable well-being*

My research integrates knowledge and methodologies from the fields of Positive Psychology and Design (i.e., Positive Design) to support human resilience and well-being. By combining the empiricism of Applied Psychology with the adaptability of Design, I create evidence-based experiences, technologies, and frameworks that enable positive behavior changes in users' day-to-day lives. Design research provides an inimitable framework from which to organize my approach, testing, and knowledge communication. For example, in my MSc work, I developed and evaluated a set of Behavioral Intervention Technologies (BITs; in the form of interactive artifacts) to help users manage their positive emotions in their day-to-day lives through positive activities. My BITs engaged users to self-select their own happiness-enhancing activities, which is a novel approach in the field of Positive Design and served as the central topic of my co-authored paper presented at DRS2023. Utilizing my prototype as a research tool, I simultaneously conducted the first RCT to test if and how the diversity of savoring techniques moderates the relationship between positive activities and well-being. Additionally, along with my advisor, I developed an evidence-based typology of Positive Emotion Regulation techniques that has been applied across several design-focused venues in both academia (e.g., Cornell University; University of Twente) and industry (e.g., Odyssey Works; Futurlogic; Neurohue; LG Electronics). My PhD research investigates how design and technology can support human flourishing with users' unique characteristics and contexts in mind. Potential directions for my PhD include: (1) participatory design to enhance eudemonic well-being (e.g., design-mediated self-acceptance, relatedness, creativity, and flow); (2) experience design for cognitive and emotional well-being; and (3) measurement and analysis of the long-term impact of such designed solutions on individuals. I am particularly interested in exploring these topics in relation to the well-being of emerging adult populations whose mental health support has suffered due to urgent global threats such as climate change, economic recession, and COVID-19. Design for well-being is a promising area that requires integration into future design education and practice. I aspire to contribute to the effort of making this new knowledge accessible to design students and professionals.

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## Dan Mu

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### *Unravelling identity's influence on design: A holistic examination of chinese independent product designers' narrative in design practice, manufacturing, and exhibition*

In the past decade, China has seen the rise of a new wave of independent product designers, including notable figures such as Frank Chou and Mario Tsai. They have achieved significant milestones by gaining recognition in renowned global exhibitions and media outlets such as Milan Design Week and Wallpaper. This research explores these Chinese designers, examining their diverse perceptions of Chinese identity and how it influences modern design practices, manufacturing approaches, and marketing strategies. By exploring these aspects, this study aims to address the gap in both academic literature and the broader history of design. It offers valuable insights into the complex interplay between China's cultural identities, economic conditions, and political context.

Many Chinese designers regard their cultural identity as a rich source of inspiration. However, the imposition of cultural identity labels often creates tension for these designers, some designers perceive the explicit emphasis on cultural identity as burdensome. This perspective underscores the tension between the implicit cultural influences on their work and external pressures to conform to cultural stereotypes. Additionally, this study reveals the paradoxical nature of cultural labels used in marketing strategies by media, retailers, and distributors, catering to diverse markets both domestically and internationally. The endorsement of nationalism in the domestic market has created contradictions for designers pursuing globalized design.

To distinguish their products from mass-produced "Made in China" items, many designers focus on creating high-quality, limited-edition products. Government initiatives like "Made in China 2025" aim to enhance China's manufacturing capabilities and promote innovation. However, these policies typically emphasize technological advancements and large-scale manufacturing, which may not align with the needs of independent designers. The prevalence of Shanzhai (counterfeit) products in China presents an additional challenge. Independent designers must navigate the complex landscape of intellectual property rights, frequently facing infringement issues. This situation forces many designers to concentrate on niche markets and high-end products, which are less likely to be copied due to their complexity and higher production costs.

At international exhibitions, Chinese designers may be mistakenly identified as designers from other Asian countries like Japan. This misperception reflects broader issues of cultural bias and the historical association of Chinese products with low quality. Moreover, Chinese designers often face substantial logistical and financial hurdles when attending international exhibitions. Issues such as visa denials, high travel costs, and shipping difficulties are common. These challenges not only add to the financial burden but also limit the presence and

influence of Chinese designers on the international stage. The visibility and national identity of Chinese designers at international design fairs are often less prominent compared to their counterparts from countries like Denmark, Norway, and the Netherlands, which receive strong governmental support. This disparity highlights the need for more substantial governmental backing to enhance the global presence of Chinese design.

By addressing these multifaceted issues, this research provides a comprehensive understanding of the contemporary challenges and opportunities faced by Chinese designers. It underscores the importance of cultural identity, manufacturing strategies, and international representation in shaping the future of Chinese design on the global stage.

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## Danwen Ji

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### *Data-driven designerly-ways of action research in social innovation*

Design is actively engaging in transforming complex socio-technical systems, especially in social innovation. Unlike technology or market-driven approaches, design-driven innovation is guided by a meaningful purpose and vision. Social innovation offers an experimental field where potential problems and solutions coexist. Even if experiments fail, these efforts drive change, creating a niche network of interconnected actors—people, projects, spaces—that lay the foundation for further development and move socio-technical systems toward their envisioned future.

In the context of social innovation, this research is shifting from merely studying the designer's activities on the design object to actively examining how design subjects, including designers and non-designers, engage in these interactions and transitions when they take designerly approaches within various social structures, such as communities and organizations.

The main case, "NICE COMMUNE," is a key hub in NICE 2035, serving as a prototype for future living, a community-based living lab, and a base for university knowledge transfer. The design team aims to connect the community in the neighborhood with daily life through ongoing workshops and projects, embedding a vision of a sustainable future lifestyle into the present community fabric. Similar cases, such as ecology villages, co-living communities, academic lab networks, and multi-community coordination events, also demonstrate the potential of intentional communities as unique landscapes for social innovation. These communities are selected for extended case study methods because they facilitate strong social connections and inclusivity, develop scalable prototypes for local and global issues, and empower individuals through active participation and capacity building to become innovators and leaders.

The researcher conducts an action research methodology to explore how these communities leverage social innovation power, as one of the actors deeply entrenched in a specific community and immerse in the details of their functional areas. To reorganize the part and the whole of the design action at a higher dimension, this study using Actor Network Theory as a lens for analysis. By mapping community dynamics and employing mixed methods—including field studies, semi-structured interviews, and quantitative network analysis—this study interprets the pivotal points where individuals shift from mere participants to active initiators.

The key outcome of this research is the theory of "embedded design," which explores how designers can act within design objects. Practical outcomes include evidence-based design practices in the main case, particularly through comparative field studies of various intentional communities, and the development of coordination tools and AI-powered design strategies generation tools, providing essential insights for practitioners and activists. This research highlights the crucial role designerly-ways of action play in catalyzing and stewarding community innovation.

By understanding community dynamics and action patterns within innovation networks, actors in community can effectively support and guide community-based social innovation projects, helping to build intentional communities that positively impact both regional communities and broader societies.

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## Maryke Laubscher

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### *Designing deployable healthcare solutions for austere environments*

Computed Tomography (CT) is a limb and life-saving type of Medical Imaging Equipment (MIE), but its availability is limited in Deployed Health Systems (DHSs). DHSs deliver care to casualties in austere settings such as combat operations, disaster relief or humanitarian aid. However, these austere contexts present numerous interwoven complexities, including delivering care while under attack, in extreme environments, with broken or incompatible infrastructure, and with limited resources while caring for poly-trauma patients. Designing healthcare solutions for austere environments' challenges is complex due to the transient and ever-changing nature of these settings, which alter between each deployed setting and hourly within them.

This practice-based PhD research evaluates the design of current MIE and explores the research question, "How might design research practices facilitate the development of Computed Tomography equipment that is mission-customizable for use in austere deployed healthcare settings?"

This research integrates a Defense by Design framework, prioritizing inductive and abductive approaches to allow for emergence through the selected methodologies. These include ethnographic, participatory, user-centered and iterative design methodologies.

Ethnographic methods such as interviews and observational field research have been integrated to gain foundational knowledge about the context-specific challenges of austere environments. Direct observation of medical professionals using Intraoperative Imaging Equipment (IIE) within surgical procedures aims to build an understanding of their functional requirements to inform surgical decisions. Ethnographic interviews with medical professionals, military officers, technology developers, engineers and other relevant stakeholders further uncover experiential knowledge about the environmental challenges and operational requirements, informing the specifications of MIE designed for austere environments.

Participatory and user-centered design methods are employed through user workflow mapping and workshops with interdisciplinary experts to explore potential service, system and product design solutions. This participatory design approach facilitates collaboration among diverse stakeholders to gather input, ideas, and critiques. By involving end-users and domain specialists in the design process, this research shapes future X-ray solutions for deployed environments based on a comprehensive understanding of user needs, technical requirements and contextual intricacies.

Iterative design methods such as prototyping, fit mapping, and usability testing are utilized in this research to develop low and high-fidelity X-ray prototypes. These prototypes enable the exploration of both technological components and design features at scale. Allowing them to be evaluated in simulated scenarios, providing the design researcher insights into their practical utility and ergonomic integration into deployed healthcare workflows.

This research aims to understand medical professionals' experiential knowledge, diagnostic and treatment needs, and the environmental challenges of deployed settings. By identifying context-specific design parameters, the design of X-ray equipment customized for use in DHSs will be informed. The expected outcomes of this research include the design of CT equipment that integrates directly onto surgical beds in field hospitals, supported by service designs that enhance both diagnostic capabilities and surgical decision-making processes. As global conflicts and natural disasters are predicted to increase in frequency and scale, resulting in more casualties, this research serves as a case study of the role of design research in developing interdisciplinary frameworks to facilitate solutions for austere healthcare settings.

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### *Urban-Nature-Data ecosystems. Co-designed, data-informed, citizens-connected practices for living in the urban ecosystems*

This thesis investigates the application of design and digital methods to foster interaction between actors on the urban scale aimed at building actions against climate change and other major global problems. The research deals with the concept of data and data visualization as a language to enable collaborative processes in the city (such as participatory policy-making and collaborative open research).

Taking it for granted that global problems - by their nature of complex issues - require collective, trans- and multi-disciplinary actions for their understanding, the hypothesis discussed in this thesis is constituted in the need to identify practices of interaction and collaboration based on raising the level of skills useful to foster an understanding of major problems extended to normally excluded segments of the population.

A further reflection underlying the thesis is constituted in the need to ferry design practices to beyond-human forms of collaboration, that is, to consider non-human actors, such as digital systems and natural assemblages, as an interacting element, specifically proposing the concept of "data as language".

In fact, the city could be defined as a multi-level context both from a spatial perspective and from an actors' spheres' perspective. From a spatial perspective, the urban context is composed by a physical level and by multiple digital levels. From an actors' spheres' perspective, the city is defined by the co-presence of humans and non-humans (environment and machines). Data is considered within this study as a potential mediator between actors and spatial levels and it is seen as a method to favour multi-level collaboration.

The theoretical framework of this thesis insists on analysis with respect to:

- The relationship between collaborative processes, particularly related to climate change, and the construction of political arguments, understood as the capacity to elaborate reflections with collective impact, by the citizens;
- The relationship between the concept of data, both as a result of monitoring actions and as a product of digital public space, and Design Cultures;
- The relationship between co-design and participatory design and urban collaborative processes, particularly related to climate risks response;
- The relationship between design and posthumanism, particularly in relation to the participation of non-human actors in design processes.

The objective of this research is to identify practices useful in bringing civic society closer to understanding the information contained within the data with a view to encouraging their

participation in collaborative processes, understood as processes of relationship with other spheres of actors.

The outreach among civic society, with a focus on actors and entities that lack detailed expertise in relation to environmental problems and/or data use and processing, takes place through the activation of learning paths based on data literacy, formats for collective interpretation of collected data, formats for data communication and data re-grounding.

As part of the research, a collaboration was activated with the H2020 project ReSET - Restarting economy in Support of the Environment through Technology, which enabled the activation of experimental initiatives aimed at testing the proposed project elements, with a focus on climate risk related to heat waves.

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## Petra Vicianova

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### *Crushing the rocks: Speculative future in the context of textile design*

Development in the field of textile design has always been naturally influenced by technological progress, socio-cultural changes and environmental needs. The current problem of textile over-production and over-consumption is not only its generally known negative environmental and social impact. The changing paradigm toward a circular economy and the so-called closed-loop system in the textile industry is illustrated by many regulations, e.g. the change in EU legislation obligating the establishment of systems for the separate collection of textiles by 1st January 2025 to enable materials to be recycled. However, recycling only solves the issue of re-creating natural resources for primary production. It does not offer a comprehensive solution to the problem of textile over-consumption and over-production. The challenge is the undervaluation of textile materials, which often arises from a lack of understanding of the production processes. This can result in the discarding of materials due to minor imperfections or changes in color shade. A reassessment of the perception of textiles in their complex form (product, service, experience, emotion, value,...) is essential for future development. This research centers on the current societal approach to textiles, advocating for a change in the perception of textile material, as well as the role of a textile designer.

This research is experimental design research where practical experimentation plays a crucial role in generating experiential knowledge. The practical experiments consist mainly of material and technological research within natural textile dyeing and printing using mineral pigments sourced from diverse rocks in combination with a protein-based binder. Choosing natural dyeing is driven by the motivation to engage in a process often challenged by its unpredictability and it is therefore a reaction to synthetic colorants designed to provide stable outcomes. The selection of the used materials is motivated by the objective to better under-

stand the properties of textile materials that are changeable, unexpected, or embody different kinds of limitations. This is grounded in the hypothesis that such understanding can assist designers in moderating the ongoing debate on societal approaches to textile materials and initiate transformative changes. The emphasis is placed on the process in all its stages during the material and technological investigation and the material-driven design method is used. The practical experimentation is conducted in the form of iteration cycles. This enables to reflect on what has been done and navigate the next steps of the research to new directions while generating new knowledge.

The next phase of the research will follow up on technological and material research and intertwine its observation with the theories of speculative design. Future speculations support the research in mapping and foreseeing the future direction in the field of textiles and help to form the foundation to answer the question: How could textile designers reflect on research in new materials with the help of public debate?

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## Katrina Newell

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### *Co-designing possible futures in the Northern Irish context*

Little research has yet been undertaken on how co-creative methodologies might support Northern Irish communities to challenge power imbalances while addressing the urgent and complex needs that exist within their areas. Following a 'Research through Design' approach to inquiry that supports learning through practice, the research seeks to understand the transformative potential of collaborative design and creative practice within communities of place in the Northern Ireland context.

The research has emerged from the researcher's experience of working as a youth and community development practitioner in North Belfast, an area characterized by a rich tapestry of communities, each with its own unique identity, and the researcher's desire to better understand how we might collaboratively design with communities to imagine possible futures and create social transformation.

Northern Ireland has a complex history. 25 years on since the signing of the Belfast/Good Friday Agreement, that paved the way for peace following a horrific period of violence, the walls, both real and perceived, remain. While it is important to continue to address the legacy of the conflict and the trauma of the past it is also important to imagine alternative futures of possibility. This research seeks to create a space where, through collective imagination, those futures can be envisioned.

The research proposes that awareness of and exposure to co-design processes will support communities in Northern Ireland to frame and develop long term strategic goals. In so doing

the research focuses on three areas: how the local context might affect a co-design process, the components necessary to create a space that nurtures co-creation for social transformation, and the relational facets within a community-based co-design process between the actors engaged.

Grounded in the field of social design, the research draws on established and emergent disciplines such as social research, agonistic design and design activism, social innovation, and futures. Epistemologically, the study follows a social constructivist perspective whereby knowledge is socially determined and co-constructed.

Fieldwork will be undertaken in three phases through a multi-methods approach. The first two exploratory phases will develop an understanding of co-design in practice. Phase one will explore co-design in the local and international context through semi-structured in depth interviews and focus groups with individuals from local government, voluntary and community sectors and local and international co-design practitioners. Phase two will involve a retrospective analysis of co-design through a case study with an island community. The third phase will capture the creative and generative process of co-design, embedded within a place-based community. Participatory Action Research (PAR), conducted through a single-case study, will guide the direction, content and output of this phase of the research.

Once complete the research will contribute to the field of design studies and, in particular, to co-creative design methodologies, holding a focus on the practice of co-design in the Northern Ireland context. The research will illuminate how co-design can acknowledge and address power imbalances, amplifying voice and building agency of those with lived experience of complex problems, in a post-conflict society, and raising awareness and engagement about urgent issues within communities.

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### *Embodied interventions for adolescent females' mental well-being: A research through design study*

The substantial bodily transitions witnessed during female adolescence frequently coincide with a transformation of the lived body into a sexual object, accompanied by a diminishing of subjectivity. This metamorphosis presents challenges to the mental well-being of adolescent females. The prevailing research paradigm in psychology and medical studies predominantly concentrates either exclusively on the cognitive and physiological aspects of the issue, while addressing such complex problem requires more ubiquitous and unifying approach.

The subject matters around women's health are intricately entwined with political, social and cultural issues, presenting problems that lack clear or definitive solutions. Design thinking and research emerge as instrumental tools for addressing these "wicked" problems, offering a holistic view to approach them within a pluralistic society. Informed by feminist theory and design theory, my research embraces an epistemology that celebrates embodied objectivity. The female body experience, once regarded as inconsequential, transforms into a reservoir of collective knowledge to shape embodied interactions between users and technologies designed to support female well-being.

The evolution of pervasive technologies, such as wearables, Mixed Reality and IoTs, introduces novel avenues for digital interventions in mental well-being grounded in bodily experience and embodied interaction. Adopting an embodiment perspective, my research investigates the interplay between female bodily experience, materiality, and pervasive technologies within the realm of design studies and Human-Computer Interaction.

My research employees two main research methods, participatory design and first person methods. Participatory design and research involves actively engaging adolescent females as co-designers and co-researchers throughout the study, aiming to generate knowledge that are relevant to their mental well-being. This approach ensures that design research outcomes are grounded in adolescent females' lived experiences and address their specific needs. Embedded in a research-through-design methodology, I utilize design practices as sources for generating design knowledge, encompassing principles, tools, and methodologies.

First-person methods in design research, such as self-observation, auto-ethnography, and somaesthetics, serve as bridges between intimate experiences and broader societal issues. This approach empowers not only researcher but also every participant in my research to articulate and communicate their unique bodily experiences. Micro-phenomenological interview in particular, is used to analyze the diachronic (across time) and synchronic (at a specific moment) dimensions of one's bodily experience identified in participatory design and research. This technique explores how these bodily experiences influence young women's mental well-being by categorizing and examining the nuanced dimensions of experience.

Through my research, I aim to achieve two objectives: first, to open up an embodied design space that addresses the mental well-being challenges faced by young women, and second, to develop tools and methodologies for embodied interventions that can effectively support and enhance their mental health. By creating a space where these challenges can be explored through embodied perspective, I seek to generate innovative approaches and practical solutions that will contribute to the mental well-being of female adolescence.

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## Thea Kable

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### *Making futures and influencing design practice: Exploring sustainable change within the australian graphic design industry through participatory workshops*

As the impacts of climate change on the planet worsen, there are increasing calls for graphic design communities to engage more responsibly with the ecological costs of their professional practice. This doctoral research reveals that while there is evident concern for ecological sustainability within the Australian graphic design industry, commitment to sustainable design practice is not yet seen as the norm. This identified value-action gap is reinforced by designers' perceived constraints of practice and the lack of shared spaces or situated resources for developing pathways to action. Additionally, unequal access to the knowledge and means for sustainable practices acutely affects emerging designers. These factors pose a significant obstacle to the development of self- and disciplinary- critiques by practitioners, and thus to industry-wide transformation.

'Making Futures and Influencing Design Practice' draws on sustainable education and practice theory to investigate how ecological sustainability is currently present within the Australian graphic design industry, and to iteratively develop resources to aid emerging designers in creating situated pathways to materially sustainable practice. This investigation is framed by a Design Justice Network informed Participatory Design methodology. Multiple suites of novel Participatory Design workshops have been developed and performed with Australian graphic design communities of practice through a reflective Critical Documentation process.

This research has identified that educational material alone is not enough to change practices; practitioners need to understand their work in context, to prioritize aspirational change, and to hold future-focused and reflexive conversations. As a contribution to the multiple resources needed to shift industry paradigms, a suite of 'Better Worlds Workshops' are being iteratively developed and tested. These Participatory Design workshops explore how emerging designers might be aided in articulating and bridging their sustainability value-action gaps. The 'Better Worlds Workshops' address learning as a process of social participation and combine educational materials with a workshop script which scaffolds self-reflexive critiques and the development of individual pathways to action. These workshops examine the use of design as a common language within communities of practice, and of worldbuilding activities in engaging emerging designers with critical reflection tools. This research aims to articulate new knowledge regarding sustainability in the Australian graphic design context and the utility of Participatory Design workshops in developing practitioners' sense of agency for sustainable action. The workshop materials will be published post-PhD as open source resources for continued iteration by interested parties.

‘Making Futures and Influencing Design Practice’ examines the ecological sustainability value-action gap in Australian graphic design, and develops novel resources for engaging designers in the critical transformation of their practices. New knowledge articulated through this research is intended to benefit working communities of practice, and to extend sustainability education theory in the graphic design industry. With a focus on the strengthening of local communities of practices and situated pathways to action, the proposed tools provide a scaffold for emerging designers to perform self-reflexive conversations oriented around shared care, hope, and critique. This research explores a big-picture, real-world problem and materializes what change is desired and what can be done about it.

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## Brian Morgan

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### *Policy by design: Enabling community-driven policymaking in Northern Ireland*

This PhD explores the integration of design research into policymaking, foregrounding contextual aspects (Northern Ireland’s infamous ‘contested’ society). Design for Policy (DfP) has the potential to address complex policy problems, but what happens in problematic settings like this?

The literature posits that DfP is pivotal in understanding the 'architecture of problems' as conceptualized by Boyer, Cook, and Steinberg (2011) and Mulgan (2014). Christiansen and Bunt (2014) highlight how design can transform policymaking by reframing practices, models, and expertise. Junginger further critiques the traditional fragmented policy cycle and advocates for a design-centric approach that views policymaking as a holistic process rather than a series of linear steps.

Junginger’s perspective emphasizes that traditional policymaking often fails to address the right problems because it does not engage with issues from the experiential viewpoints of everyday people. This critique aligns with the Deweyian notion of inquiry, proposing that ‘policymaking as designing’ involves a deeper investigation into situations by exploring what makes them problematic for people.

This is pertinent to the unique context of Northern Ireland, which frequently has periods without a functioning government (so has often sought community input by necessity). It seeks to extend existing research by investigating ‘bottom-up’ policymaking; how design approaches enhance communities’ involvement in policymaking and the outcomes when these communities play a collaborative role.

The research question addresses how design enables communities to coordinate collective action for effective policy impact in Northern Ireland.

It is divided into two strands:

1. Theoretical: Investigating the integration of a design approach into the Narrative Policy Framework (NPF) - a Policy Process Research model.
2. Practical: Initiating a space for agonistic policy dialogue in Northern Ireland.

Kaufman's (1967) assertion that policy is both rhetorical and actionable underscores the practical aspect of this research. Dorst (2011) frames design research as the parallel creation of an object and its method of operation, reinforcing the need for a holistic view of design in policymaking. This study adopts Research through Design (RtD), foregrounding design activity as central to its method and outcomes. Dixon (2023) notes that RtD projects often engage with real-world contexts and aim to effect positive transformations.

The research employs Participatory Action Research (PAR) to involve communities in the policymaking process actively. Koskinen et al. (2012) describe the evolution of design research from the lab to the field to the showroom. This methodology aligns with Bason's design-intelligence-choice paradigm for DfP, which involves building prototypes to learn from practical applications.

Methods include:

- Lab: Narrative Policy Framework 'tweaks' – Design workshops with activists to interrogate NPF from the user perspective, identifying potential touchpoints for activist intervention.
- Field: Morphological Charts – Collaborating with community groups to refine a 'DfP from below' framework into actionable tasks.
- Showroom: Ethnography/PAR – Establishing a space for agonistic dialogue with a community, establishing a Democratic minipublic on Rathlin Island, to prototype alternative democratic processes aiming for broader application in Northern Ireland.

Using these approaches, this research aims to foster innovative, inclusive, and effective policy development practice that resonates with the needs and experiences of communities.

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### *Nurturing activism: Understanding the role of relationality and care in shaping activist group process*

Often what comes to mind when hearing the word 'activism,' are images of protests, placards, mass mobilizations in the streets, blockades, petitions, raised fists, and megaphones. These images convey resistance, moral anger, and messages to motivate action. However, underneath all that is an invisible layer of organizing, strategizing, and planning – the actions of people working collectively to target key issues for change. It is this 'invisible layer' that forms the focus of inquiry of my interdisciplinary PhD research. How these groups voluntarily give shape to their ways of working together and what keeps them together over time.

Here, my research challenges our common understanding of activism as I present a contradiction: for activist groups to be most effective at fighting for change externally, they must nurture relational ways of being internally. This introduces inherent tensions – to fight, they must care. To resist, they must embrace. To challenge power structures, they must empower themselves.

Established and contemporary literature on social movements have shown relationships to be the foundation of any successful activist group. Thus, if relationships between individuals are weakened due to internal tensions, then their capacity to collaborate also weakens. However, current literature reveals a gap in understanding how to address these tensions practically. I draw upon ontological design and awareness-based systems change to bridge this gap within social movement literature. Nurturing Activism aims to study the means by which activist groups are redesigning how they are working together, often emergently, with the desired end of effecting a social change. It has three key objectives: 1) To understand how non-hierarchical activist groups design their group practices (e.g., facilitated meetings and workshops). 2) To establish the relationship between care and relationality within activist groups and its effect on their group process. 3) To design and test frameworks to assist activist groups in designing new practices. Nurturing activism aims to work in an embedded and participatory way within activist communities drawing upon critical participatory action research, practice-based ontological design, discursive design, and critical making. These approaches also address limitations found in much of social movement scholarship by questioning the traditional "external" stance in academic research and fostering collaborative engagement with the activist groups I will be researching with.

Ultimately, my research advances three key areas of knowledge. The first is scholarship in social movement studies by going beyond the social sciences and integrating design research. In doing so, I aim to develop insights that can go across disciplinary boundaries, informing all three fields. The second is to contribute to building a conceptual and practical 'bridge' between academia and activism, a relationship damaged by extractive research

practices of the past. Last, and perhaps most important, is to generate insights that will support researchers and activists whose interest is improving the functioning of activist groups. In this way, I see my work as part of a broader movement to support those fighting for progress on the most pressing issues of our time.

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### *Affordances as tool for ecosystem mapping in a context of regenerative ecologies*

Environmental concerns and the compelling need to operate within planetary boundaries result in the search for novel approaches and solutions to support the transition to materials and processes which are ecological and regenerative to achieve holistic sustainability. Regenerative frameworks suggest the adoption of a holistic vision where all different ecosystems actors' humans and non-humans are comprehensively considered in their interconnections.

Wool is a natural renewable fiber with invaluable intrinsic characteristics produced by sheep whose grazing offers a regulatory service to the ecosystem, if not bred intensively. If sheep are farmed according to regenerative farming standards, the extracted wool can achieve carbon neutrality thus becoming a well-equipped beneficial player in a regenerative context. In addition, wool is one of the purest sources of keratin, a remarkably useful protein. Its recovery from end-of-life and low-grade wool presents worthwhile applications in different industries. Wool and wool keratin processing cover a vast array of transformation methods ranging from rural and craft-based approaches to cutting-edge biotechnologies, resulting in a plethora of applications which can address different societal needs. All these aspects require a new level of attention to take into consideration the reverberation of action and decision by industry stakeholders in the wider ecosystem, human and non-human, thus including the planet as stakeholder in the process.

The concept of affordances, firstly theorized by Gibson, has been adopted in multiple disciplines and some scholars suggested that the concept of affordances could aid individuals to harness the resourcefulness of the environment. By drawing from a literature review across different disciplines, affordances can be defined as relationships between the offerings of the environment and the abilities of a form of life to harness them. As such affordances are characterized by being relational and hence highlighting the potential interconnection between two entities and generating mapping. Ecosystem mapping enables context unpacking and the concept of affordances - due to its broadness - could facilitate the generation of eco-

system mapping to the level of details necessary to follow a regenerative framework by signposting interconnections between different entities. Firstly, by deploying participatory design approaches I aim to investigate how the concept of affordances can be translated into a tool for ecosystem mapping in the context of regenerative ecologies. Secondly, by investigating the translation of the concept of affordances into a mapping tool applied in the context of wool ecosystems I aim to extend knowledge to the design field about the translation of theoretical concepts into regenerative design tools. Thirdly, my research aims to develop a tool which could facilitate regenerative practices in the wool ecosystems and thus supporting different actors in producing mapping of their ecosystem to guide informed decision-making process by visualizing the wider impact of potential operations in their ecosystem.

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### *More than light design*

In addressing the problems linked to the growth of urbanization and the world's urban population, their impact on biodiversity and resource use, urban agriculture has proven to be an excellent solution, allowing to improve the various environmental and social contexts, through the restoration of the beneficial interaction of man with nature, and to increase the amount of productive green within urban contexts.

In particular, artificial lighting, supplemented by natural lighting often insufficient for plant growth, especially in indoor environments, is one of the main focuses of current reflection: the energy consumption of these systems is considered a limiting factor for large-scale application.

The research, selection and design of these lighting systems, which normally moves between Botany, Horticulture, Plant Photobiology and Lighting Technology, sees, in my PhD course, the integration of the contribution of Design for the development of new strategies that allow, on the one hand, a responsible use of energy resources and improve plant growth; on the other hand, optimal lighting conditions for humans and non-humans sharing the same living spaces.

Light represents an emblematic 'place' for reflection on the boundaries and modes of production for industry, in which design and production skills are linked to aspects of invention and technology. Research in Light Design, historically focused on sources, surfaces to be illuminated and optimal lighting conditions for humans, requires a broadening of its horizons through more-than-human-centered perspectives. Interspecific design, applied to the design

of light, could provide the tools to simultaneously meet the needs of different species, holistically integrating 'cultures of nature' into the outcomes of design processes. It could provide new insights into how lighting and plants interact, fostering symbiotic techno-vegetal associations, in which technology connects us with the functions of the plant, transforming it from an object to be illuminated into a subject that autonomously controls its own lighting.

In an initial desk and on-field research phase, the cultivation systems currently on the market will be analyzed to provide an overview of the current offer. Literature and experiments developed in other disciplines will be studied to translate the most advanced research results into project outcomes. Focus groups with experts from other disciplines will allow latent information and desires to emerge through structured and semi-structured interviews. Through a methodology of learning by doing, the tools and capacity of Design will be sought, as its ability to mediate between science and technology, to translate project briefs into artefacts and systems.

Through these, it will be possible to understand complex issues that go beyond their disciplinary boundaries, encouraging the simulation of processes, accelerating and facilitating the understanding of phenomena and integrating the most advanced results of scientific research into everyday objects. Finally, following the testing and validation of the prototype, in which focus groups will also be involved, the dissemination of the results will take place.

The expected result, in addition to the development of a prototype lighting system, is a contribution to the advancement of the body of the discipline through the development of guidelines and best practices that can facilitate and guide the work of future designers.

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### *Exploring the role of rural-based craft practitioners in United Nations sustainable development goals: A comparative study in the UK and China*

This ongoing doctoral research project focuses on the role of rural-based craft practitioners in achieving the United Nations (UN) sustainable development goals (SDGs) through a range of craft practices, specifically in Chinese and Scottish contexts. In this research, “craft practice” refers to the work of both professional and hobbyist practitioners who use local materials and traditional craft skills to generate craft products. This definition also encompasses additional craft activities, including establishing studios and craft-based social enterprises.

Researchers have argued that craft practices and rural resources can serve as alternative approaches to current challenges, such as worsening climate change, slow economic growth,

and the disruption of local cultural ecosystems. However, despite emphasis on the UN SDGs, the significance of rural areas and crafts has been broadly overlooked within the SDG framework. Consequently, the connections between rural regions, craft practices, and sustainable development have yet to be established. In this context, to understand the complexities surrounding socially responsible making and the sustainability of traditional crafts, this study focuses on the UN SDGs, especially goals 8 (decent work and economic growth), 12 (responsible consumption and production), and 13 (climate action). This research aims to a) demonstrate the similarities and differences in policymaking, production of craft products, longevity of traditional materials, and locality within the contexts of Chinese and Scottish craft sectors, b) identify new possibilities for promoting the transition of the craft industry in the rural setting, and c) develop appropriate approaches to balance long-term social sustainability and the needs of craft practitioners.

This qualitative comparative study employs a multi-site rapid ethnography methodology to investigate two culturally active rural areas—Chongming (China) and Fife (Scotland). Archival research, case studies, semi-structured interviews, and participant observations were selected to provide a comprehensive understanding of local innovation and place-based making. In this study, tensions between safeguarding intangible cultural heritage and economic priorities were identified based on reflective and thematic analysis. Concerns regarding the transmission of traditional craft skills and the thriving of craft sectors also came to light.

The expected contribution of this research is to add to the existing literature on comparative studies, rural-based craft practices, and sustainability. This will be achieved by critically discussing the economical use of intangible cultural heritage (ICH) elements and examining how craft practitioners' activities relate to the UN SDGs from a cross-culture framework. Additionally, this study will create opportunities to challenge the stereotype associated with the "made in China" label and foster more inclusive and sustainability communities through a non-Western-centric view.

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### *Design for human augmentation: Building a design framework for assistive technologies for wellbeing and longevity*

Human Augmentation is an emergent field that integrates wearable and implantable technologies into the human body to assist, substitute, or enhance its natural sensory, physical, and cognitive capabilities. Predominantly driven by technology-centric perspectives, the primary focus of this field has been on ensuring functionality and usability to improve performance, particularly within military, industrial, and healthcare contexts. These traditional approaches often incorporate design considerations only at the final stages of development, addressing ergonomics, aesthetics, or storytelling. This top-down methodology, however, frequently fails to anticipate and comprehend the impacts that augmentation technologies may have on individual behavior, identity, ownership, and social interactions.

The present doctoral research positions Design Research as a crucial element in the evolution of Human Augmentation, proposing that design-based approaches are essential for understanding the evolving needs, desires, and expectations of users. By leveraging design methods and tools within this technology-centric domain, the present work aims to foster a more empathetic understanding of human desires, expectations, and fears. This, in turn, can drive the development of more humane, life-centric, and ethically aligned technological solutions.

The core objective of this work is to develop new design methods and tools for Human Augmentation, particularly focusing on a methodological framework for design-focused interventions in the creation of wearable interfaces. This research primarily addresses the theme of augmented health, examining social stigmas surrounding wearable health devices, user behavior and acceptance, and the overarching narrative of longevity through technology. A significant aspect of the research is its challenge to ageism and ableism, concepts often linked to socially determined standards of performance that neglect the unique needs and qualities of marginalized groups, such as people with disabilities and the elderly.

To construct a new narrative and development agenda around these issues, the research adopts a dual approach comprising theoretical investigation and practical experimentation. This approach will facilitate the development of a design framework, which will be validated through prototyping and co-design activities involving interested individuals.

By integrating design research into the development process of Human Augmentation technologies, this work aims to bridge the gap between technological capabilities and human-centric design. The anticipated outcome is a set of design methods and tools that can be employed to create wearable interfaces that are more attuned to the social, emotional, and ethical dimensions of human augmentation. This research has the goal to offer a contribu-

tion to the establishment of a more inclusive, empathetic, and ethically responsible approach to the development and implementation of augmentation technologies, ultimately enhancing the quality of life for a broader spectrum of users.

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### *Translating interoception: Ethics in health technology design*

This study investigates the explosion of neuroscience research on interoception following a large National Institutes of Health (NIH) funding initiative in 2021, then anticipates the translation of this research into medical and consumer health technologies. Interoception is the body's internal perception of itself, which is important in homeostasis and emotional modulation. Future interoceptive technologies will sit somewhere between wearable activity trackers (non-invasive tracking and behavioral nudging) and neuromodulatory devices (direct intervention) and will likely be marketed as treatments for issues such as PTSD, anxiety, autism, anorexia, obesity, chronic pain and depression. Current examples include transcutaneous vagus nerve stimulators (tVNS), and the Frisson Prosthesis, an affective haptic device that mimics the sensation of aesthetic chills.

The concept map illustrates the theories that have thus far guided the work, and the potential paths charted while narrowing the research topic. Although the future is always imaginary, and therefore challenging to study empirically, the social processes grounding its emergence can be explored.

While nascent interoceptive technologies hold great promise, their ethics have yet to be considered. Rather than reactionary ethical policing after technologies are embedded in daily life, philosophers of technology suggest shifting to an *ethics of accompaniment*, where ethical considerations instead become a companion throughout the development and design process. However, complex health technologies developed through the translation of science are shaped by a multitude of disciplinary perspectives and stakeholders before they reach the public. How then, could an *ethics of accompaniment* function in practice?

The current research question is "How can ethics be considered early in the development and design of interoceptive technologies?" The tentative research design is a sequential exploratory study.

Phase One will use bibliometric keyword analysis to trace interoceptive research across disciplines involved in translation (neuroscience, psychology, engineering, public health, design and business), while mapping any co-occurrence of ethical concepts (privacy, normalization, autonomy, etc.). Bibliometric keyword analysis is a method borrowed from Information and Library Science that is traditionally used to track the emergence, evolution and collaborative affinities/ interdisciplinarity of research topics. It is also used to forecast trends. This phase will result in a description of the growth and current status of interoceptive research and any developing ethical concerns.

Phase Two will consist of interviews with experts at various points in the translation process of interoceptive research (NIH program officers/ authors of the 2021 funding initiative, neuroscience researchers, biomedical engineers, designers, potential end-users and any other

stakeholder group revealed in Phase One). These interviews will focus on understanding ethical touchpoints/ processes/ systems both formal (Institutional Review Board [IRB], Food and Drug Administration [FDA], etc.) and informal in each sector's practice along with any personal recommendations.

The final synthesis will aim to 1) outline opportunities for early ethical considerations in research and professional practices alongside the process of translation, and 2) scaffold interdisciplinary dialog and suggest prospective ethical foci for future interoceptive technology development and design.

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### *How does modeling support non-professional designers in co-design?*

Co-designing is a promising approach for design practice, where designers partner with multidisciplinary stakeholders to help them transform or prepare for a desired, sustainable change. Typically, co-design is done for the design of complex systems and services. In co-designing the roles of designers, clients and users interchange to co-develop a design future that best addresses a challenge, after thoroughly evaluating user needs/experiences/and contexts. Expert designers and participants use diverse representational artifacts, models, or prototypes in the process of co-designing to make abstract ideas tangible while facilitating critical discussions. This dissertation will study how modeling activities in co-design strengthen infrastructuring conditions (the capability to design-after-design). The term 'modeling' describes three types of activities that happen in the design process - making models (representations, prototypes, artifacts, ideas), making sense (framing and developing compelling narratives), and making infrastructures (to support and sustain the designed future).

In this research the author is co-designing with stakeholders from fire departments in the United States along with researchers with a background in social science and data informatics. The goal is to co-design desirable futures for the fire departments while identifying short and long-term outcomes that inform the design of risk driven information technology systems for the fire departments. This research aims to establish a case study to better understand how modeling activities can support non-professional designers in collaborative practice, particularly analyzing if these activities instill capacities in them to design-after-design. The author will use design ethnography as a framework to study and analyze data.

The author is particularly interested in using experiential and speculative approaches to model making to uncover relevant insights in this study. Using the work of Buchenau and

Suri (2000), the author understands experiential prototyping as techniques of active participation like improv and body storming, which prompt participants to reflect about product functionality and share their subjective experience of using a product. In combination with Candy's 'experiential scenarios' approach (2010), Candy and Dunagan (2017) propose using an 'experiential ladder' method to speculate about desired futures. They see an experiential ladder in the form of a provocative scenario that connects the past to the present, but also impacts the future. This captures the stakeholders imagination and allows them to collaboratively come up with ideas for the future.

This case will analyze how designers can facilitate co-design activities and make sense of insights by developing connections from the emergent process. The author sees a potential between using these modeling methods to design for the future or to design-after-design. This relates to the concept of infrastructuring which makes invisible artifacts visible - enabling participants to question, challenge and redesign them.

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### *Designing transdisciplinary systems, environments and thinking for radical innovation*

Human development has afforded us modern lifestyles filled with advanced technology and social structures; however, such development comes at a significant cost to the planet and poses an existential threat to humanity. My PhD explores the role of design and innovation in driving sustainable socio-technical transitions, focusing on startups as catalysts for radical change within complex systems, given their disproportionate ability for rapid, transformative change.

My design research integrates multi-disciplinary theories from organizational design and systemic transformation to entrepreneurship and innovation. At its core, this study seeks to transcend the technical, positivist, and reductionist approaches that have contributed to our current planetary crisis by exploring the central theoretical concept of 'radical innovation' through the lens of human cognition and mindset.

Within this theoretical framework, I examine the environments, conditions, and factors that foster radical innovation in startups, aiming to uncover insights applicable to broader organizational contexts and socio-technical systems. This approach not only evaluates how design-led innovation theory translates to real-world applications but also challenges and expands the boundaries of traditional design research. Ultimately, this work aims to forge new paradigms that can contribute to complex sustainability challenges more effectively.

Central to my PhD is a three-phased phenomenological exploration of founders' experiences in diverse global contexts: San Francisco, Sydney, and Bengaluru. This cross-cultural approach ensures a rich, nuanced understanding of innovation practices across different ecosystems, focusing on the human elements that drive radical innovation rather than solely technical process aspects.

Employing a multi-method approach grounded in design research, this study combines semi-structured interviews, micro-phenomenology, design workshops, participatory action research, and design futuring techniques. This combination of methods allows for a comprehensive exploration of both individual experiences and broader systemic patterns, providing a holistic understanding of radical innovation in practice.

My business and law school education, background in the commercial world, and experience working in industry, including at a startup, significantly influence my research perspective. This unique positionality allows me to bridge academic theory with practical, real-world insights.

By exploring, identifying, and addressing the human dimensions of radical innovation across diverse global contexts, my research aims to inform practices that may ultimately progress our ability to foster radical innovation driven by organizations in complex systems. I seek to contribute knowledge that is geographically and culturally diverse, while advancing inclusivity in design research. The outcomes have the potential to shift and progress the mindsets of changemakers, researchers, and innovators. I seek to inform practices that may ultimately progress social transitions or result in more sustainable systems, advancing progress to some of our most wicked challenges. My PhD contributes to the growing discourse on the role of design and innovation in addressing sustainability challenges.

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### *Industry 5.0 and the innovation of work in the factory: User Experience Design to redefine the human-machine relationship between physical and digital interactions*

The research aims to investigate the new relationships between humans and machines in the factory of the future. In this context, design is posed as a mediating tool between the human/physical sphere and the machine/digital sphere, capable of defining methods of interaction and involvement favourable to a collaborative relationship that is resilient to technological changes (which are currently moving towards a machine-centricity and performance focus).

Given the practical imprint of the research (leveraging Research Through Design), the focus was on communication with the machines and the individual tasks (production line, assembly, monitoring, decision-making sphere and maintenance), which defined two main themes that guided the activities:

- The first theme was the digitally assisted operator in industrial processes: the focus was Augmented Reality applied to repetitive tasks with high cognitive load. The experimentation environment was that of a highly specialised factory in which it was possible to test how, with the involvement of the operators and engaging modes such as gamification, the quality of work can improve following the introduction of an experience-based design methodology.
- The second theme was the physically-assisted operator in industrial processes: the focus was Collaborative Robotics applied to the performance of a shared task with a high physical load. The experimentation environment was that of a maintenance plant, where it was possible to test how, with the addition of a robotic component on repetitive physical and high-precision tasks, the quality of work can improve due to the introduction of a methodology that is both investigative about the user's needs and design based on the effective communication of interface and user experience.

The design applied to the two contexts allowed the research to progress and contributed to the identification of key intervention areas where design can be fundamental:

1. Explaining and clarifying what workers need to use, improving communication and establishing better collaboration with devices or systems.
2. Active collaboration with engineers and co-design of automations that are effective and functional, but reliable from the users' point of view.
3. Designing a user experience that places humans as the central mechanism in the use of automations, helping to reduce the loss of work and improve its quality through new and engaging tasks.
4. Design of easily learnable machines, improving human-machine and human-human communication.

Each point will subsequently contribute to the definition of a design framework aimed at the easy introduction of the design discipline in industry, that could participate in the definition of a new human-centered industrial revolution.

Therefore, the introduction of the designer in engineering environments belongs to a research plan that aims not only at design but at the contamination of disciplines and collaboration with the figures and tasks involved, with the purpose of fostering change and innovation, directed towards a positive thinking about technology as a means no longer of opposition and threat, but of help and human progress.

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### *Human-Material Interaction as Practice of Relating within our Environment*

The basis and premise for this PhD research project is the understanding of a design process as a way of learning, understanding, and relating.

I understand the design process as a physical, crafting, experimental approach leading to a design. The knowledge and experience that arise from such processes between human and non-human actors go far beyond the actual design and are the focus of my interest. Emphasizing the notion of experiential moments that arise in this physical interaction, I speak of Human-Material Interactions.

The knowledge that is created during Human-Material Interactions is, on the one hand, embedded in the created objects and, on the other hand, is personal and individual experiences and access to knowledge for the interacting people, which can also lead to the formation of new values. Therefore, these interactions are a relevant way to strengthen individual and situated knowledge. The research follows a feminist standpoint and is located in post-humanist concepts as well as in constructivist learning theory, referring especially to experiential knowledge and related concepts.

I explore how Human-Material Interactions can be designed to support rich experiences for the participants, what is motivating to stay in the process instead of looking for a solution or an outcome, and also how to connect criticality and reflection with the process.

The research methods build first on auto ethnography and later on participatory ethnography during workshops. To gain insights into the individual experiences from the perspective of the participants, semi-structured interviews are conducted, followed by qualitative content analysis.

Located at Crafting Futures Lab, which is a research Lab connected to the department of teacher's training in design and technology, the research is constantly reflected in a surrounding with future teachers, school, and museum settings.

The first findings address the narratives and the relationships that arise from human-material interactions. The arising narratives are shaped by both humans and materials or non-humans and are - tangible and intangible - mutual imaginations. In addition, we have found that interaction with materials creates relationships that lead to caring attitudes. These were directed towards the self, the material, and the environment, but also social structures. These findings can provide important foundations for education and experience with sustainable and appreciative living within our environment.

However, the idea of living and reflecting on our relationships within our environment more consciously by physically interacting and learning also raises many ethical questions. It must

be recognized that people can act and interpret more actively and are speaking actors. This dominance must not lead to prematurely and intrusive conclusions but must be considered.

Recognizing that long-term practices and in-depth study are particularly fostering individual experiences, I want to examine the relationships that arise through the transmission, practice, and reinterpretation of craft practices in future case studies.

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### *Temporal intersections in design: A multi-sited exploration of design practice, more-than-human theory, and critical data studies*

My doctoral research focuses on expanding temporal methods in design research and Human-Computer Interaction (HCI). My approach considers multiple timelines within design practice and field work, recognizing interactions between human and non-human entities across various temporal scales, from immediate events to historical impacts, while acknowledging the influence of long-term ecological changes and sociopolitical legacies, thus integrating historical and ethnographic methodologies with design principles to understand and design for these interactions in alignment with feminist theories on temporality (Parreñas 2018, Sden et al. 2021, Rahm el al. 2022, Grosz 2005, Berlant 2020).

A significant portion of my research is understanding actors across multiple sites and timelines, recognizing that interactions are often multidirectional and nonlinear. This perspective acknowledges the intricate and dynamic nature of human and non-human interactions over various temporal scales. At this stage of the dissertation, I am exploring aspects of temporality, entanglement, and situatedness in three different sites: (1) an ethnographic account of a two year participatory design project aimed at connecting young people to sexual health services in Chicago; (2) an on-going co-design project that is building tools for U.S. based youth-serving librarians to teach children about privacy literacy; (3) a speculative data project that explores intersection of data practices, technologies, temporalities, and water in the Great Lakes Region of the United States. Through analysis of these cases through MTH and feminist STS theories, I am highlighting how design methods can make entanglement, relationality, situatedness, and multi-temporalities visible.

The goal of this work is to contribute design methods to the field of HCI, emphasizing the importance of integrating theoretical perspectives and contextual data. This contribution aims to enhance the capacity of design research to address complex ecological and social challenges by fostering a deeper understanding of relationality and ecological interdependencies through design methodologies.

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### *If we can't talk about it, we can't design it: Public narrative as a method for exploring social complexity within social design practice*

Story is used to make sense of the world, and then it is used to change it. Designers have a history of telling new stories and weaving narratives that envision preferable futures, but they do not often understand how stories, specifically public narratives—those that are part of broader social discourse—uphold and maintain the very social structures they are trying to change. Designers are often complicit in unknowingly reinforcing existing social inequalities when existing narratives aren't explicitly acknowledged. Additionally, qualitative design research can often overly rely on personal narratives because they do not have the literacy or tools to work with public narrative.

Both design and narrative have unique attributes that can be applied to social change. The power is in understanding their capacity to do so. Narrative has been studied by a variety of disciplines, but there is a lack of research on the potential of leveraging public narrative and its implications for social design projects, participants, and practitioners. This is especially true of social design projects involving sensitive and taboo topics that potentially complicate the exploration of existing narratives.

The objective of this research is to expand public narrative-driven participatory methods within social design while also acknowledging the complication of taboo topics within participatory and narrative strategies.

The study is guided by a core research question and two sub-questions:

- What new and novel ways can public narrative be leveraged within a participatory social design practice to help reveal social complexity?
- What aspects of narrative discourse contribute to and complicate it as a strategy for social change?
- How does taboo, and its often invisible and unspoken nature, entangle the exploration of public narratives as a tool for social change?

Through case studies, further research will explore the practice and theory of storytelling in design and focus on the potential of new knowledge around methods and contexts. In parallel, practice-based research will further explore the potential of using narrative as a way to reframe project context and existing "problem stories" within social design practice.

The potential contribution to research is substantial. It intends to make recommendations for methodology and methods for using public narrative within the broader context of social practice. By also identifying the complexities inherent in narrative discourse, the field of design can better understand how awareness and literacy about public narrative can impact social design projects. Finally, integrating taboo into this work will contribute to new

knowledge about narrative and its implications for social design projects, participants, and practitioners.

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### *Towards authentically artificial relationships: Eco-social contracts as alternative to Terms of Service*

The artificial has changed. We now design and interact with fluid assemblages that consist of material and immaterial elements distributed over networks, receive ongoing updates, have multiple versions for multiple audiences, and evolve through use. (Redström & Wiltse, 2019). While these new things destabilized the distinctions between design and use, and production and consumption (Coulton & Lindley, 2019; Giaccardi & Redström, 2020; Redström & Wiltse, 2019), they try to appear 'as if' things as we have known hiding away their complexity and simulate similar uses. This creates a rift between ethics and aesthetics (Hauser et al., 2021), that is further complicated with the form of engagement these things impose: ongoing relationships (Özçetin & Redström, 2024; Özçetin & Wiltse, 2023).

In my PhD project, I take a pause with 'artificial' to attend to the problems arising due to this rift by using Terms of Service (ToS) as a key site for inquiry as it facilitates and controls users' participation by legitimizing this rift. By moving in-between disciplinary boundaries, scales, mediums, and time periods, I explore how we might design authentically artificial relationships attending to the more-than-human entanglements that are hidden from view. I frame my explorations under a design research program 'Designerly ways of becoming: aesthetics of in-betweenness' consisting of four practices:

In 'Designerly ways of reading: Relaying foundations for Terms of Ideas', I position my research in related work. Demonstrating the limitations of the usability approach to ToS interfaces, I move towards technological mediation, care, and democracy.

In 'Designerly ways of attending: Releasing design for Terms of Trauma', I highlight what needs to be released in business models based on surveillance capitalism (Zuboff, 2019) that shape ToS, the user experiences ToS prescribes, and user-centered design approach that serves frictionless ToS interactions.

In 'Designerly ways of seeing: Revealing design for Terms of Entanglement', I reveal the entangled relations and intentionalities as expressed in policy ecosystems hidden behind the 'I agree' checkboxes by looking through posthuman lenses such as entanglements, decentering, and co-performance (Özçetin & Wiltse, 2023).

Building on these, in 'Designerly ways of hoping: Reimagining design for Terms of Radiance', I begin to explore how we can design eco-social contracts that better distribute power and control among the various more-than-human actors that co-perform digital interactions.

Through design explorations that emerge in dialogue with theory, I highlight the necessity to shift towards more-than-human design for a democratic data governance design space to emerge. In support of this, I problematize certain concepts that not only fall short but also prevent us from thinking otherwise. By mapping the dynamic policy ecosystems distributed across continents brought along by corporations making the fluid assemblages, I propose ToSsphere concept to replace ToS (Özçetin & Wiltse, 2023; Özçetin & Redström, 2024). I reflect on the potential policy implications of my explorations as well as design as a practice of policymaking.

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### *Futures as Medium: Bringing together practices of designing and (de)futuring to co-create pluriversal futures*

Design and futures have a longstanding and intricate relationship within both academic and industry landscapes. However, many existing applications of these practices adopt Western/Eurocentric notions of progress and innovation, which limits the reimagining needed for transformative change, especially for our future cities. Visualizations of futures have continued to be static and present a single universal viewpoint, often replicating outdated concepts of what futures can be. Our inherent worldviews limit our imagination, creating boundaries around our potential to envision plural futures. As a result, discussions about exploring pluriversality in design and futuring have emerged within academic discourse and are beginning to be explored within creative practices. Amidst uncertainty, climate crisis, and significant societal and infrastructural changes, moving towards co-creating futures that transcend ingrained notions of foresight, progress, and innovation is becoming increasingly necessary.

Originating in the global South, the notion of the pluriverse seeks to decenter dominant Western/Eurocentric worldviews, highlighting diversity of cultural perspectives, especially those of Indigenous people. A pluriversal approach to designing/futuring practice that co-creates with others may offer multiple lenses through which design projects can explore alternative ways of conceptualizing and approaching futures. By bringing a more complex, nuanced and multiversal level of awareness to futuring practices, and by recognizing that creation and destruction are two sides of the same coin (the building and taking away of worlds,

futuring and defuturing), design may overcome its stagnation and be better equipped to imagine and facilitate the futures that are needed.

My research aims to build an understanding around the plausibility of a pluriversal approach to design and futures, and if such an approach could influence and enhance design and futuring practices in placemaking. It draws on my experiences as a visual communication designer and my relationship with design for innovation. I ask the questions: in this confluence of designing and futuring for placemaking, how could I contribute to acknowledging and co-creating pluriversal futures? What is required in terms of specific skills, knowledge and mindsets for a practitioner working in this space?

The research employs a creative practice-based exploration that includes textual and visual analysis, case studies, design ethnography (such as observation, interviews, and autoethnography), participatory design workshops, and reflective practice. In my personal context, I am exploring the concept of the pluriverse as a means to move beyond a singular dominant worldview and to embrace and hold space for the diverse voices present in the world. This doctoral research aims to challenge my own creative practice and foster co-creation with others by bringing together varied groups of participants and applying multiple research methodologies. It seeks to reimagine alternative approaches to practice at the intersection of design and futures, enabling more expansive explorations of what our futures could look like and be within the context of design for placemaking.

Ultimately, this research aspires to foster an alternative approach to designing futures, one that moves beyond perceived limitations and opens up alternative possibilities for co-creating spaces and experiences that reflect the diverse and dynamic nature of our worlds.

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