

Being *Meaningful*: Weaving Soma-Reflective Technological Mediations into the Fabric of Daily Life

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ABSTRACT

A one-size-fits-all design mentality, rooted in objective efficiency, is ubiquitous in our mass-production society. This can negate peoples' experiences, bodies, and narratives. Ongoing HCI research proposes design for *meaningful relations*; but for many researchers, the practical implementation of these philosophies remains somewhat intangible. In this Studio, we playfully tackle this space by engaging with the nuances of soft, flexible, and organic materials, collectively designing probes to embrace plurality, embody meaning, and encourage soma-reflection. Focusing on materiality and practices from e-textiles, soft robotics, and biomaterials research, we address technology's role as a mediator of our experiences and determiner of our realities. The processes and probes developed in this Studio will serve as an experiential manifesto, providing practitioners with tools to deepen their own practices for designing soma-reflective tangible and embodied interaction. The Studio will form the first steps for ongoing collaboration, focusing on bespoke design and curation of meaningful, personal relationships.

CCS CONCEPTS

• **Human-centered computing** → **HCI design and evaluation methods**; *Interaction design process and methods*; *Interaction design theory, concepts and paradigms*.

KEYWORDS

Plurality; Materiality; Somaesthetics; Soma Design; Feminism

ACM Reference Format:

Alice C. Haynes, Courtney N. Reed, Charlotte Nordmoen, and Sophie Skach. 2023. Being *Meaningful*: Weaving Soma-Reflective Technological Mediations into the Fabric of Daily Life. In *Seventeenth International Conference on*

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TEI '23, February 26 – March 01, 2023, Warsaw, Poland

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ACM ISBN 978-1-4503-9977-7/23/02.

<https://doi.org/10.1145/3569009.3571844>

Tangible, Embedded, and Embodied Interaction. ACM, New York, NY, USA, 5 pages. <https://doi.org/10.1145/3569009.3571844>

1 PROPOSAL

Capitalist society values objective efficiency, prioritising productivity and reaching a broad spectrum of users at low cost over meaningful, individual interactions. This prizing of efficiency has led to one-size-fits-all and one-tool-fits-all design mentalities, requiring people and interactions to adapt to fit with technologies, rather than embracing and reflecting the pluralities in peoples' experiences, bodies and narratives. Thus, we often find ourselves in tension with technologies designed for 'normative' bodies (predominantly white, cis-male, young, fit, mentally stable and physically able), and increasingly accessing the majority of our data via screen-based devices that prescribe to a sensory hierarchy, valuing vision and audio over other modalities.

TEI and peripheral HCI communities have been engaging with these issues for years; it is over two decades since *Tangible Bits* [19] and *Ambient Displays* [39] envisioned a shift away from accessing our digital and virtual worlds predominantly via screens, calling for more diverse, embodied, and aesthetic interactions with data in the physical world. Since then, the conversation has grown and evolved, including the introduction of new philosophies around technology (e.g., philosophy of technology [17], postphenomenology [37], and entanglement [9]), which understand technologies as "mediators of human experiences and practices" [38] that shape our lived experiences and interpretation of reality. This has serious implications for designers; we must recognise the enormous responsibility of our position [16], deeply consider *who* we design for – acknowledging our assumptions and being inclusive of diverse bodyminds [35] – and critically examine our design processes such that we can develop technologies that shape human experiences in meaningful and supportive ways. Design practices have been developed (e.g., bodystorming [29], body-mapping [8], in-bodied design [1], and soma design [15]) that aim to achieve this by incorporating our felt experiences and *somas* – Shusterman defines soma as our "living, purposive, sentient, perceptive body or bodily subjectivity" [33] – into the design process. This is not an easy task, requiring that we slow down enough to become sensitive to and engaged with our own somas in order to design from this place.

In this Studio, we come together to collectively engage with these challenges with the aim of evolving our design mentalities and practices. We focus on materiality, specifically of soft, flexible, and organic materials, as a means of exploring this space. These materials are, by nature, adaptable, diverse, and unpredictable, reflecting the plurality of human experiences and inviting a relational dialogue with the material. We will develop design probes with these materials to explore what it means to design for soma-reflective, meaningful relations. In doing so, we do not expect to find answers, but rather to find solidarity; through sharing experiences, experimenting with ideas and initiating on-going collaborations, we can support each other as a community to become conscious designers of technologies and therefore human experience.

2 THEORY

In this Studio, we weave together three key themes in our exploration: philosophy, somaesthetics, and materiality. We begin our investigation of these themes by revisiting familiar work from TEI and peripheral design and research communities (Figure 1), which will provide inspiration for this Studio.

2.1 More-Than-Human Philosophy

Our Studio draws heavily on Feminist HCI principles and recent work within the community that has focused on the plurality of experience and designing for bodies. In the advancement of research and understanding of human behaviour, "traditional" empirical practice is to make generalisations about how we experience and learn about the world, counter-intuitively reducing natural plurality [3]. Design must be approached in a way which is conscious of the diversity of not only experience and background but also *bodies* [35]. In over-generalising for an "ideal" user, we run the risk of defining relationships with the body (and indeed the body itself) through non-transparent and non-representative data [21]. Adopting the nascent 4th wave HCI conception of the body as *more-than-human* [13], we recognise the body as "dynamic, material, relational and being reconfigured at all times", entangled with social and cultural contexts, and inseparable from ethics and politics. In approaching body-based interaction, we here reject generalisation and assumptions about behaviour and experience, favouring personal meaning at the individual level.

2.2 Somaesthetics

We bring the second component, *somaesthetics*, into this Studio to acknowledge the importance of engaging with our sensory bodies in designing for meaningful interactions. Somaesthetics unites "soma", our bodily subjectivity, and "aesthetics", our sensory appreciation [32], foregrounding the body as a medium of sensory perception and subjectivity that is purposive and sentient. Höök draws from this philosophy in her Soma Design practice [16] which proposes a shift towards incorporating our felt experience in design. She highlights Sheets-Johnstone's *primacy of movement* theory [31]: movement is fundamental to our perception and reasoning, more so to human meaning-making than symbolic and linguistic processes. This concept that "movement comes first, language second" [16] challenges the pre-disposition in our society to favour linguistic and symbolic meaning-making over bodily intelligence and sensory

experience. In this Studio, we foreground our somas in the design process to engage with this rich source of meaning and embrace the multi-faceted intelligence of our bodyminds.

2.3 Materiality

The third component of this Studio is *materiality*. The materials we design with impact more than functionality and aesthetics; they *in-form* our designs and partake in on-going dialogues with us and other human or non-human entities within a system. We take inspiration from Barad [2] and Ingold [18], viewing materials as participatory agents of the design process. With this perspective, designing and making is seen as a "*material-discursive practice*" [2] in which matter and culture are inseparably entangled" [24, 25]. To engage in dialogue and meaning-making with a material requires somatic sensitivity and openness, "drawing on the intimate relationship between movement and emotion" [5]. We purposefully engage with soft, flexible, and organic materials in this Studio to invite the qualities they embody into our designs — qualities such as versatility, resilience, (non)compliance, and (un)predictability. We make space for these materials be agents in the design process.

3 THE STUDIO

This hybrid Studio will use largely synchronous elements, balancing online and in-person communication (depending on the need of the participants) to bring together a group of researchers, designers, and practitioners to develop these themes. We will select a maximum of 16 participants through a Call for Participation.

In the Call, prospective participants will be asked to provide a position document — diverse formats supported — detailing a data stream, probe, or interaction paradigm that they would like to explore, and soma-reflective strategies and/or flexible materials they believe will benefit that exploration. We will outline the following research questions, as our focus for the Studio:

- (1) What are some aspects of individuality and plurality which are currently not being addressed in HCI research? What elements are relevant to your work and where should we focus our attention through soma-reflective design?
- (2) How can we actively incorporate resistance to objectivity and overgeneralisation in design, upholding the tenets of the Soma Design Manifesto, and design for living and well-being in our own work?
- (3) How can we utilise existing methods and technology (e.g., flexible materials, e-textiles, handicraft, biodata sensing, etc.) to address the soma and individual experiences? How might these be applied in different research fields?
- (4) How can we play to our own strengths and knowledge to collaboratively address these design concerns, share knowledge, and form a multi-disciplinary community around these principles?

3.1 Goals

The Studio focuses on two main goals: sharing the methods and materials that we can use in our mediation, and exploring soma-reflective approaches for the areas in life and data streams where these approaches will be most valuable. We incorporate strategies

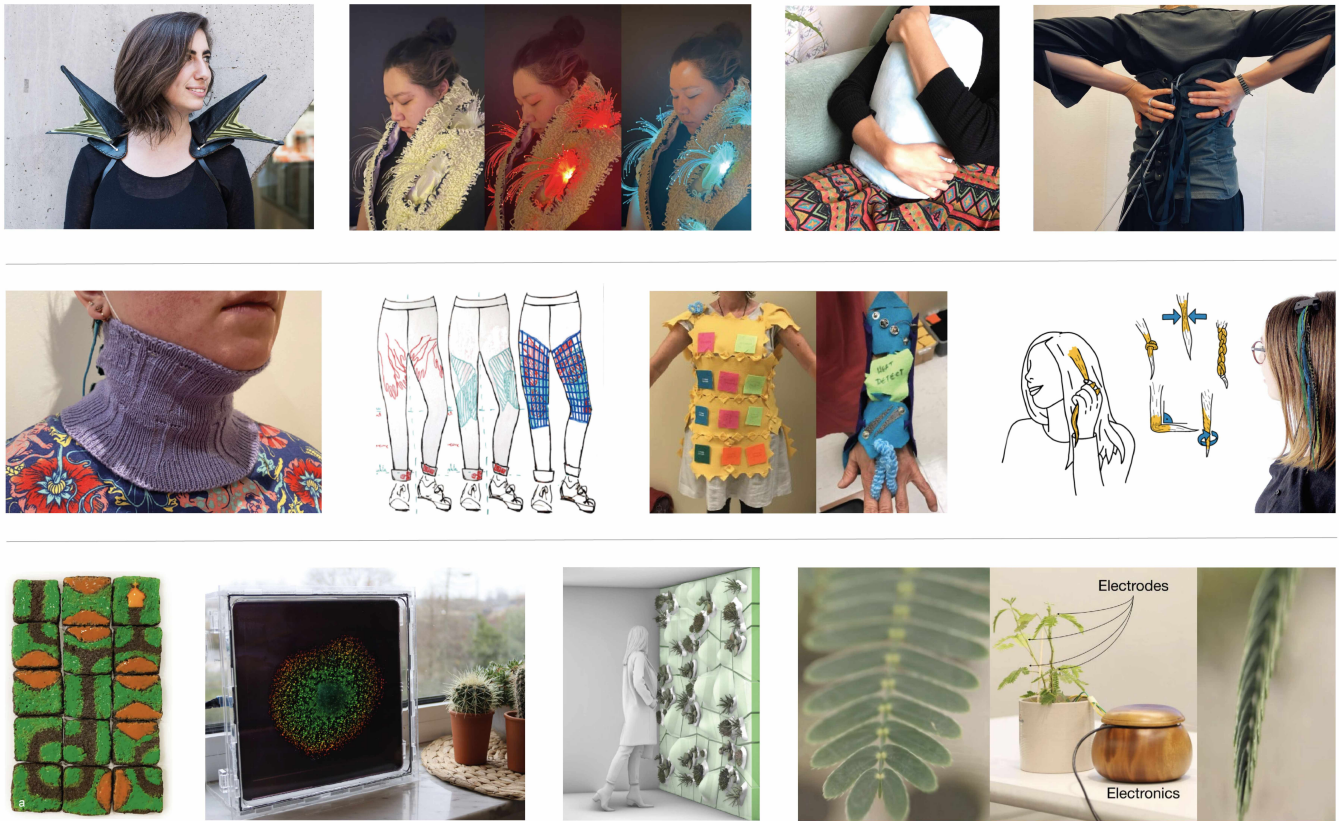


Figure 1: Inspirations from: (top, left to right) interactions with biodata including Monarch V2 [11], the Breathing Scarf [7], the Calming Cushion [12], and the Breathing Shell [36]; (middle, left to right) technologies embedded in everyday garments such as Singing Knit [27], Smart Trousers [34], Wearable Bits [20], and Feather Hair [23]; and (bottom, left to right) the re-purposing of and interaction with organic materials and properties like ReClaym [4], Flavorium - Living Monitor containing Flavobacteria [10], PheB [28], and Pudica [30]. Permission was received for use of each of these images, see image credits below. ¹

that have been utilised in previous, related workshops within the HCI community:

3.1.1 Learning Goals.

- (1) *Sharing* - Through a celebratory sharing of different experiences, materials, crafts, and space (physical or virtual), we find inspiration, community, and solidarity [26]. **Learning**

goal: To support each other in consciously evolving our design mentalities and practices as individuals and within the community.

- (2) *Exploring* - We make a safe and inclusive space for playful exploration with materials and each other, inviting weird, absurd and radical ideas to be heard [22]. **Learning goal:** To create design probes by experientially engaging with the theory and materials outlined above.
- (3) *Unfolding* - We open ourselves to what wants to unfold both during and post-Studio. We prioritise well-being through conscious attention to how technology mediates our experience and relationships with our bodies, focusing on the 7 tenets of the Soma Design Manifesto [6, 14]. **Learning goal:** To be *present* to ourselves and foster what arises; e.g., new relationships with materials and people, new perspectives on our design practices, new community projects and collaborations.

¹Image credits as follows: Monarch V2: Image from Hartman et al. (2020) used with permission from Kate Hartman, with image credits to Social Body Lab and photographer Maxwell Lander. Breathing Scarf: Image from Cochrane et al. (2022) used with permission from Karen Cochrane and Yidan Cao. Breathing Shell: Image from Tsaknaki et al. (2021) used with permission from Vasiliki Tsaknaki. Calming Cushion: Alice Haynes. Singing Knit: Courtney Reed. Smart Trousers: Sophie Skach. Wearable Bits: Image modified from Jones et al. (2020) used with permission from Lee Jones. Feather Hair: Image modified from Muehlhaus et al. (2022) used with permission from Marie Muehlhaus. ReClaym: Image from Bell et al. (2022) used with permission from Fiona Bell. Flavorium: Living Monitor containing Flavobacteria by Groutars and Risseuw et al. (2022), image used with permission from Eduard Groutars. PheB: Image from Sabinson et al. (2021) used with permission from Elena Sabinson and Keith Evan Green, Architectural Robotics Lab, Cornell University. Pudica: Image from Seow et al. (2022) used with permission from Cedric Honnet.

3.1.2 Tangible Goals.

- (1) *Probes* - The design exercise will create a series of probes — sketches, objects, initial feedback designs — that serve as tangible loci, anchoring our discussions and providing grounding for future work. **Tangible goal:** To leave this Studio with a series of initial explorations of soma-reflective technology in research areas that are important to us and the TEI community.
- (2) *Next Steps* - Participants will leave the Studio with more know-how and concrete plans to continue their exploration of these materials and practices through research. **Tangible goal:** To ensure everyone leaves this Studio with inspiration and a pathway for their own research and future work within this community.
- (3) *Documentation* - We document our probes and discuss themes relevant among the work of the participant group. These themes can inform future collaboration, such as the collection of these probes and explorations into a future paper/pictorial or another workshop. **Tangible goal:** To gather relevant information and exploration to share with the rest of the TEI community and beyond, following this Studio.

3.2 Approach

Based on position submissions, we will organise accepted participants into groups of 3-4 people. There will be times where all participants work together, as well as time in these smaller groups. The Studio will involve four larger phases:

3.2.1 Kick-off and Introduction. Using their position papers as a springboard, we invite participants to begin with a 2-3 minute introduction of themselves, their research interest, and what they hope to gain from the Studio. We will address any other questions and do a body-scanning exercise to prepare mentally and physically for the Studio.

3.2.2 Examining the Design Space. We will explore relevant strategies derived from our list of inspiration work and how different technologies, materials, and feedback modalities can be used in soma-reflective approaches. Groups will review each approach in a walk-around Brainwriting exercise and then present a summary of one technology to the other groups.

3.2.3 Probe Creation. Using supplied materials — paper, clay, print material clippings, drawing elements, other physical objects, and found materials — groups will design a probe and detail what it investigates in their desired interaction space. The exercise is aimed at generating initial ideas and applying the relevant approaches previously discussed.

3.2.4 Speculation and Discussion. The speculation exercise will involve sharing the probes and exchanging ideas between groups. Participants will discuss and feedback on the implementation, design strategies, human-centred factors which might be missing, and how the probe or a similar implementation might impact a person and environment. We will gather together ideas and assemble documentation, including written information and photographs, of the probes generated.

3.2.5 Closing and Next Steps. We conclude by discussing future plans to disseminate our knowledge and the factors explored through the probes. After the Studio, interested participants will be contacted for further collaborations.

4 OTHER LOGISTICS

4.1 Hybrid/Virtual Plans

The Studio is designed to be hybrid; in activities where participants work in groups, the participants joining online will make up their own group(s). We will use Zoom for audio-video communication and Miro for online visual documenting and note-taking during the activities, to give every participant access to all content. This also provides asynchronous and later engagement with resources.

4.2 Recording and Photography

Through the group-discussion phases, we will audio-video record group presentations and discussion for later reference. These recordings will **not** be shared outside of the organiser group but may be used for later transcription to assist dissemination of materials from the Studio and further collaboration.

Photos will be taken throughout, for instance of the probes and the design process. We may share photos on the Studio website and social media, as well as in further presentation and publication of Studio results; for this reason, participants will be asked if they consent to photography and sharing of this media. Any who opt out will not be photographed. Those who opt in will be notified in advance of these materials being shared.

ACKNOWLEDGMENTS

Charlotte Nordmoen is funded by the Centre for Doctoral Training in Media and Arts Technology, EPSRC grant EP/L01632X/1.

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