Queer/Crip Body Mapping: Expressing Dynamic Bodily Experiences with Data

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ABSTRACT

Drawing on queer and disability theories alongside tangible body mapping techniques, we explore alternative ways of mapping embodied experiences and expressing affective sensations. Our collaborative autoethnographic approach incorporates sensors to trace our somatic experiences over time, pairing visualizations of contextual biodata with personal reflections in written or spoken form. We unpack how these alternative approaches to body mapping support reflecting on, communicating, and deepening understanding of embodied experiences by foregrounding temporal and situated aspects. We offer expanded body mapping methods by sharing a plurality of experiences that embrace queer and crip ways of knowing, foregrounding alternate temporal and spatial representations.

Authors Keywords

Body Mapping, Somaesthetic Design, Queer HCI, Disability Studies

CSS Concepts

•Human-centered computing~Interaction design~Interaction design process and methods

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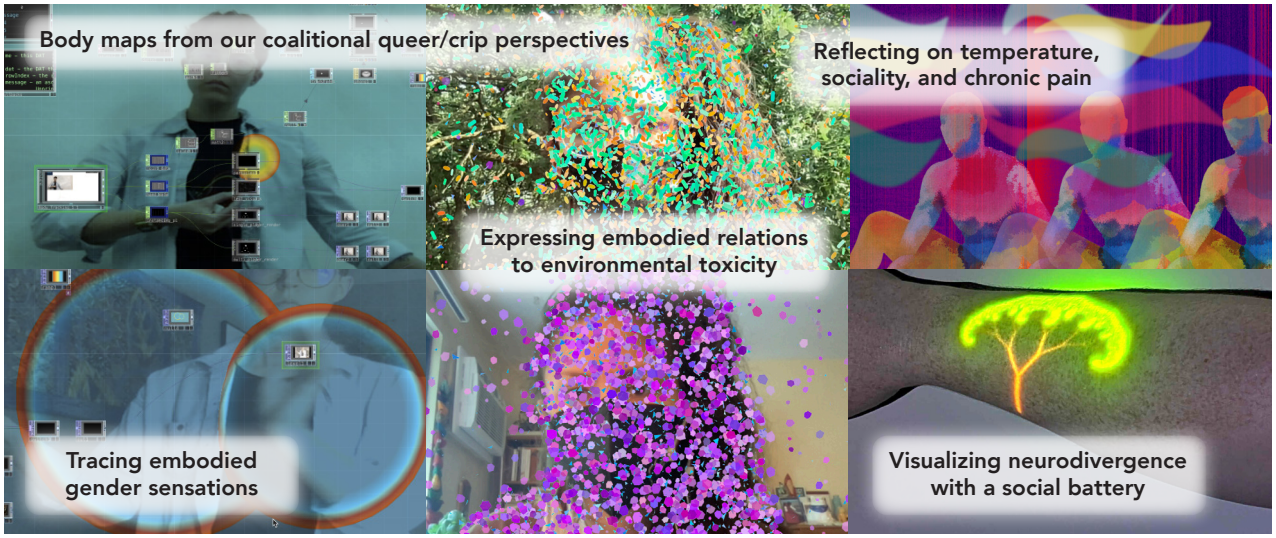


1 INTRODUCTION

In soma design, body mapping is a well-established method for expressing embodied experiences otherwise difficult to articulate, allowing individuals to document sensations, emotions, and narratives directly onto a visual outline of the body through symbols, drawings and annotations [11, 77]. Body maps serve as reflective and communicative tools that can transform complex and often invisible bodily experiences into visible forms to foster self-awareness, interpersonal connection, and broader understanding across diverse groups [11, 31]. However, traditional body mapping methods have been critiqued for flattening experiences or universalizing representations of bodies [68]. The embodied experiences of disabled, BIPOC, queer and trans people resist categorization and are not easily visualized within standard body mapping practices. Recently, scholars have called for body mapping from LGBTQIA+ perspectives [8] and have used queer/crip theories in tracings of queer / trans disabled bodies [70]. This research invites further exploration into body mapping from queer and disability perspectives. In this pictorial, we ask: **How can we continue to deepen approaches to body mapping from queer/crip perspectives by engaging with dynamic temporal and spatial qualities of bodily experiences?**

To express queer and disability perspectives, we ground our body mapping approach in queer and crip theories. Queer

theory challenges "regimes of the normal," embracing fluidity, messy abundances, and radical cooperation [47:5]. Crip theory confronts ableist societal norms, emphasizing the value of diverse lived experiences of illness and disability. Both perspectives critique dominant narratives that often marginalize non-normative bodies and experiences [68] to foreground alternative ways of being and feeling [44, 68, 70].

Specifically, we build on techniques developed through traditional body maps in tangible spaces [58, 77, 79] to explore alternate ways to visualize the dynamic, situated, and fluid bodily experiences of queer and crip perspectives. We foreground the importance of expressing multiple temporalities and situated spatial contexts in embodied experiences. Doing so, we further expand on body map representations beyond typical static, context-less forms to respond to calls for exploring temporality and spatiality [58, 78].

We explore alternative body maps in a four-part collaborative autoethnography, centering our respective lived experiences while dialogically finding intersections by articulating our experiences across differences [5, 46, 64]. Our body maps incorporate sensors that trace our somatic experiences of gender, chronic illness, chronic pain, and neurodivergent sensory disabilities over time, in situated contexts, expressing the complex entanglement of bodies, feelings, and the social and physical environment. Our visualizations of sensor data map these temporal, spatial, and affective dimensions directly onto our bodies. We use these practices to express queer/crip embodied experiences, building on critiques of biosensing that erase embodied differences and construct false binaries of normalcy and deviance [18, 32, 44, 51].

We contribute the following to soma design in HCI: (1) we expand body mapping methods by incorporating queer/crip perspectives to elevate alternative temporal and spatial bodily experiences; (2) we integrate sensor data as part of our body mapping approach to support dynamic temporal and spatial representations. We highlight these approaches in resisting bounded individualism to extend beyond bodily boundaries and challenging fixity to engage with ongoing and dynamic felt experiences.

2 RELATED WORK

2.1 What are Body Maps?

Body maps are tools used to express, document, and analyze somatic experiences by representing bodily phenomena in various graphical forms [11, 31]. Body maps can be displayed as body outlines or in more abstract forms [11]. They help researchers understand specific embodied phenomena [13, 59], showcase reflections on embodied sensations [31], and transfer bodily experiences via experiential qualities into physical designs [12, 73]. By capturing complex and non-explicit emotions and somatic sensations, body maps elaborate narratives that cannot be easily spoken, making them valuable descriptive tools for understanding complex embodied experiences [13, 59]. Recent work has explored how we can augment body maps by using crafting materials besides pen and paper [10, 77]. However, body maps have often relied on static, external representations of bodies, conforming to normative outlines or standards.

2.2 Queer / Crip Embodied Perspectives

In response to the lack of focus on marginalized experiences in body mapping practices [68], our work draws from queer/crip readings on bodies that resist rigid categorizations, standardization, and essentialism of "normal embodiment" [68]. Instead, we explore complex, entangled, and relational interpretations of bodies [17, 30, 71] that trouble the separation of bodies and environments in western notions of bounded individualism [3, 9].

We especially highlight design projects that use biodata in interpretive and affective ways to represent the complex entanglement between bodies, technologies and their environments (e.g. [34, 35, 38, 41, 42, 67]), which informed our approach for body mapping that integrates sensor data. For example, Howell et al. use tangible design to show how biodata can be felt and shared with other people in life-affirming ways [35]; Parvin and Pollack visualize heart data to show how multiple bodies come into relation in a shared environment [38]; Janicki et al. show how biodata readings are affected by nuances of how our bodies come into contact with the environment [41]. These feminist, queer/crip readings of biodata invite new ways of expressing relationships between our feelings, other people, and the spaces we inhabit [56]. In our body maps,

we similarly use sensing, coupled with environmental and biodata, to relationally express and entangle our individual perspectives.

In addition, we draw from queer/crip writings on time and space, which resist linearity, causality, and futurity to embrace alternative spatio-embodied "orientations." This includes the concept of crip time, describing an uneasy relationship to the pace of contemporary life in disability culture [27, 44] that can manifest as a "slowing down" and "disruption" of daily routines [20] or time travel that "extracts us from linear, progressive time" [63]. We also draw from "crip technoscience," which centers disability justice in critiques and reconfigurations of infrastructures and technologies [25]. Queer/crip writings have also described the uncomfortable, unsettling, and unpredictable relationships between bodies and space [6]. For instance, Sara Ahmed describes "bodily experiences that throw the world up or throw the body from its ground" [1:157], which questions normative orientations between bodies and their surroundings. Scholars have also explored how leveraging queer theory in tangible interaction can express alternate embodied perspectives [61, 62]. Our body maps draw from these queer/crip perspectives to embrace alternative relations between bodies, spaces, and temporalities.

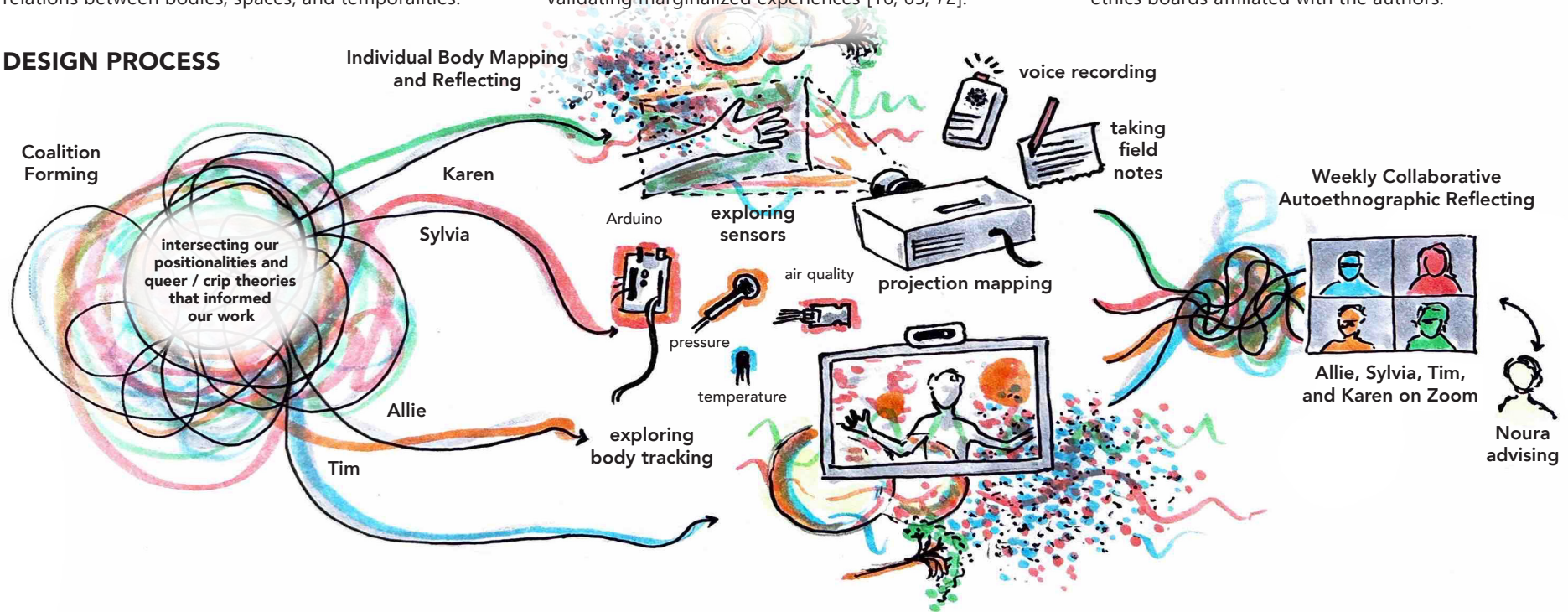
3 DESIGN PROCESS

3.1 First Person Methods in Design

Our project starts from our embodied experiences of discomfort, vulnerability, or "disorientation" as grounding for reflections and explorations of biodata [6, 19]. We follow a growing body of work in HCI that uses first-person methods [14, 24], drawing from autoethnographic and autobiographical projects that foreground disability and queer experiences of technologies [28, 39–41, 45, 69], as well as reflections on vulnerable or difficult experiences [15, 23, 26, 33, 37]. We especially highlight collaborative autoethnography as a method for bringing together lived experiences to relate across differences and build collective understandings [5, 46, 52]. Collaborative autoethnography enables researchers to explore first-person, subjective experiences within a shared, reflexive framework [64]. Using collaborative autoethnography, we position body mapping as a relational method that connects our personal narratives through shared engagements and interpretations. This relational approach aligns with queer/crip theories, emphasizing community and collective agency as central to understanding and validating marginalized experiences [16, 65, 72].

3.2 Coalition Formation and Collaboration

We first connected at a conference, where we discussed our shared interests in soma design and queer/crip theory. We formed a collective through weekly Zoom meetings, during which we engaged in an ongoing collaborative autoethnography. Our meetings became a space for mutual reflection, where we shared our lived experiences of chronic illness, queerness, and embodiment, while independently exploring body mapping through sensors and biodata. Each week, we discussed our process and progress, offered each other design feedback, and brainstormed how to shape and frame our body maps as a collective. While each of us worked independently to develop our body maps, our discussions created a shared interpretive space for thinking relationally across our differences. We co-created an understanding of body mapping that respects each of our unique positionalities while also situating these experiences within a larger, interconnected framework of queer and disabled embodiment. These conversations also engaged theoretical intersections that deepened both our individual reflections and our collaborative understandings. This work was approved by institutional ethics boards affiliated with the authors.

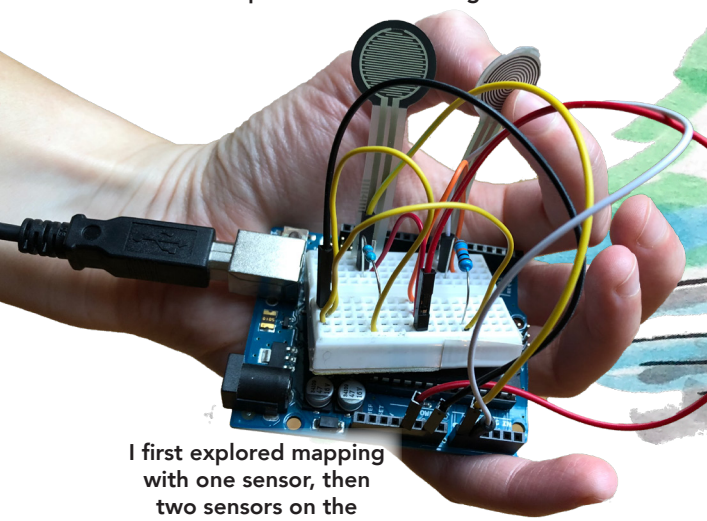


4 QUEER/CRIP BODY MAPPING REFLECTIONS

4.1 Queer Body Mapping (Allie)

I first began exploring body mapping when I needed a way to express complicated feelings about gender, pain, and an ongoing, undiagnosed medical experience that had manifested the previous year. In these body maps, I also wanted to deliberately push against the quantified, or in my case gendered and medicalized, self. I developed a series of speculative sensing enactments where I used force sensing resistors (FSRs) to interpret my felt experiences of gender and chronic symptoms, expressing tension and emotionality in the sensation of pressing my fingers together against the sensor. I connected first one FSR, and then two in a later exploration, to an Arduino, which I then linked to TouchDesigner. In TouchDesigner, I used a machine learning body tracking plugin [7] to map my body position through my computer's web camera. I connected the Arduino FSR readings to my wrist movements, forming spheres to indicate my wrist positions and the force of my touch. As a result, TouchDesigner could track my hands while I moved, and when I pressed on either of the force sensors, the respective spheres would follow my hands and enlarge. The force of a press on either of the sensors indicated an intense emotional sensation or feeling of tension about a particular part of my body. For instance, giving the sensor a hard pinch and moving it to my chest (so that the sphere rested near my heart and enlarged with the force of my press) indicated feelings of physical discomfort, but also emotional uncertainty about my body through the twin lenses of gender and chronic symptoms.

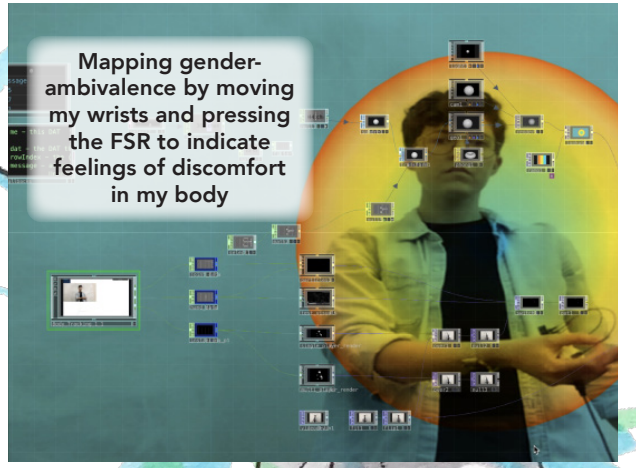
In practice, the body tracking in TouchDesigner also proved glitchier than imagined. The program tracked my wrist movements using machine learning, while tracking



I connected an Arduino to force sensing resistors (FSRs) in a simple prototype to control the sizes of spheres in Touch Designer

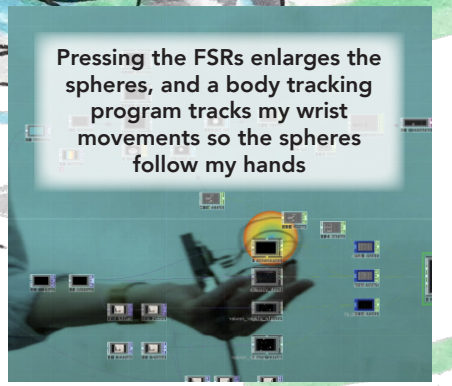
I first explored mapping with one sensor, then two sensors on the following page

The pressure-sensitive spheres represented felt sensations of uncertainty around gender and medical diagnoses. Moving my wrists to various parts of my body, I pressed and enlarged the spheres to emphasize symptoms or ambivalent gendered feelings.

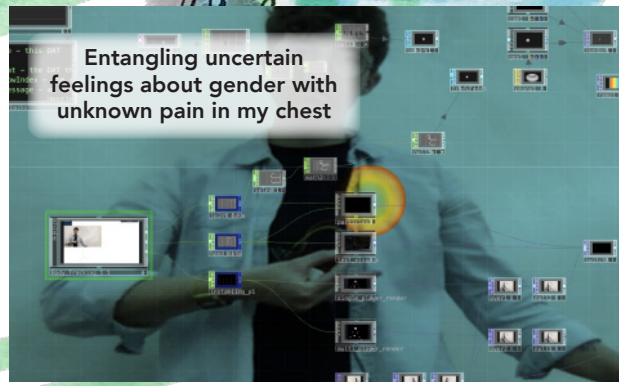


Mapping gender-ambivalence by moving my wrists and pressing the FSR to indicate feelings of discomfort in my body

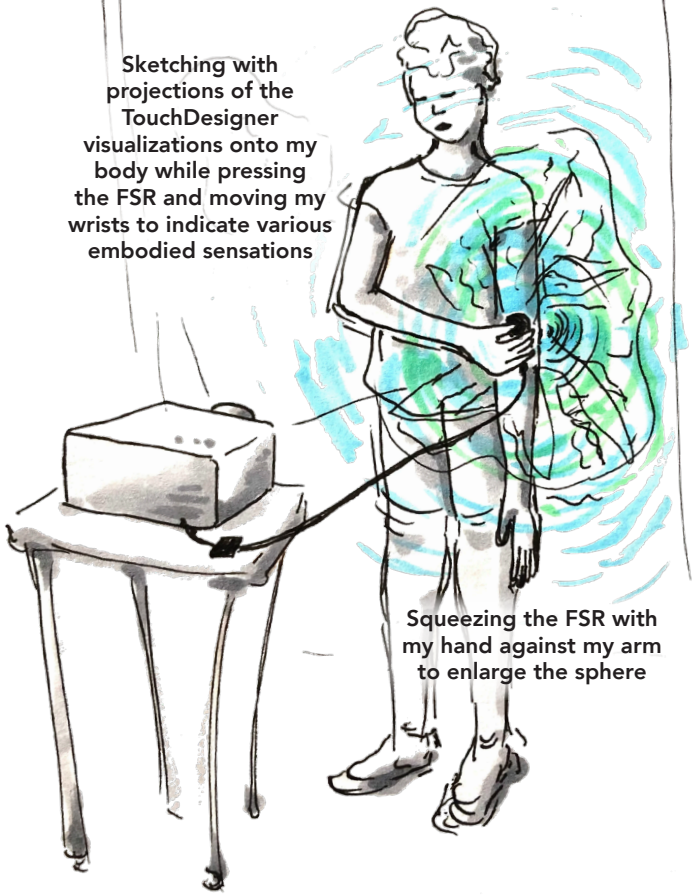
Mapping pain sensations from a recent hand injury



Pressing the FSRs enlarges the spheres, and a body tracking program tracks my wrist movements so the spheres follow my hands



Entangling uncertain feelings about gender with unknown pain in my chest

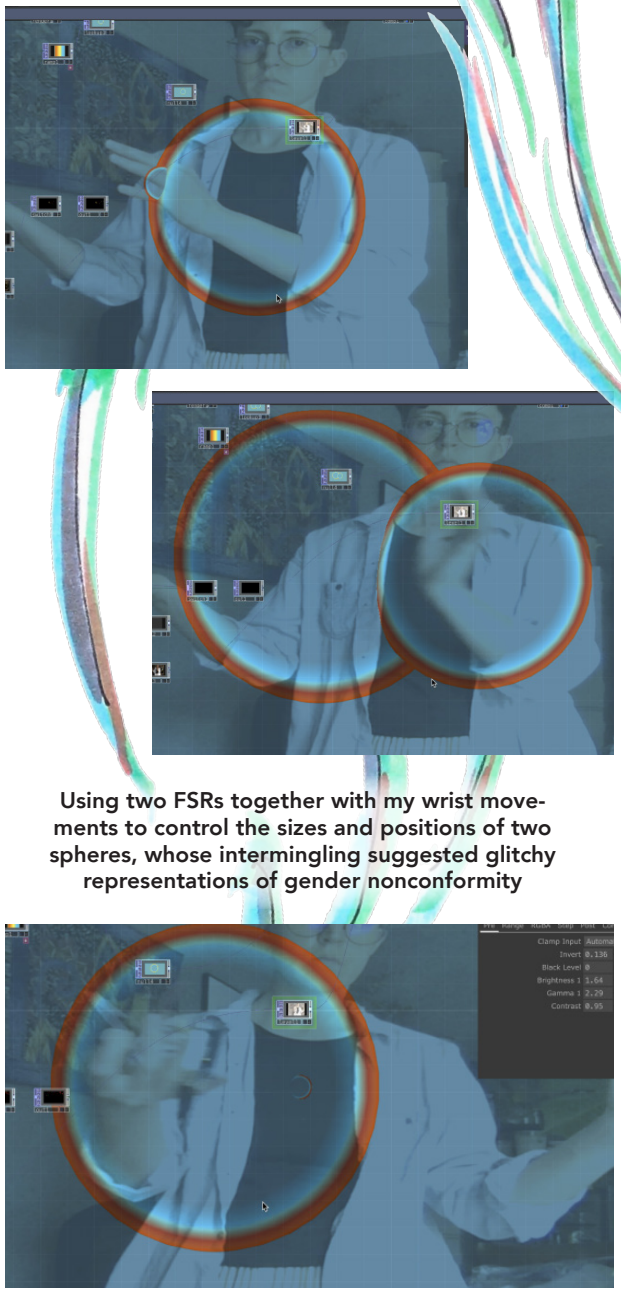


Sketching with projections of the TouchDesigner visualizations onto my body while pressing the FSR and moving my wrists to indicate various embodied sensations

Squeezing the FSR with my hand against my arm to enlarge the sphere

the size of the spheres depending on how hard I pinched the FSR, but these two interactions would often lag and create jagged, disconnected movements. I also needed to exaggerate my wrist movements to get the program to move the spheres synchronously with my wrists. As a result, the spheres lagged, dropped below the frame when I accidentally stepped outside of the camera, and generally misbehaved. Instead of correcting these glitches, I moved with them, finding ways to glitch the system further, taking pleasure when I could evade the body tracking program. For instance, using two FSRs, I pressed both simultaneously and positioned my wrists such that the spheres would overlap and intermingle. These movements caused the two spheres to glitch together, at times blending digitally or unexpectedly eclipsing one another. I experienced this intermingling as a blending, confusing, and glitching of binaries or genders. However, the resulting visuals drew attention to my body in unexpectedly gendered ways, such as emphasizing my chest, mimicking cellular reproduction, or recalling breasts and nipples. Ironically, in my glitching attempts, I reemphasized my own biological essentialism, drawing attention to the very parts of my body I wished to remain uncertain and ambiguous.

By enacting glitchy body maps, I played out these tensions temporally, at times resisting essentialized categories, and at others, falling into them. Creating body maps with sensors to visualize my movements temporally and physically allowed me to play at this intersection, complicating the machine learning tracking software by remaining in-between over an extended time. The software's involuntary glitching also allowed me to reflect on my own bodily ambivalence and unease, recalling recent work in queer computation that speaks to glitching existing technologies to express queer perspectives [22, 66]. I examined the queer/crip potential of FSRs and body tracking software by using these technologies to enact the questioning and uncertainty characteristic of my queer/crip experiences. In comparison with drawing, body mapping with FSRs and body tracking software enabled tangible connections between felt sensations and my emotional interpretations of queer/crip experiences as they unfolded dynamically over time.



Using two FSRs together with my wrist movements to control the sizes and positions of two spheres, whose intermingling suggested glitchy representations of gender nonconformity

4.2 Crip Body Mapping (Sylvia)

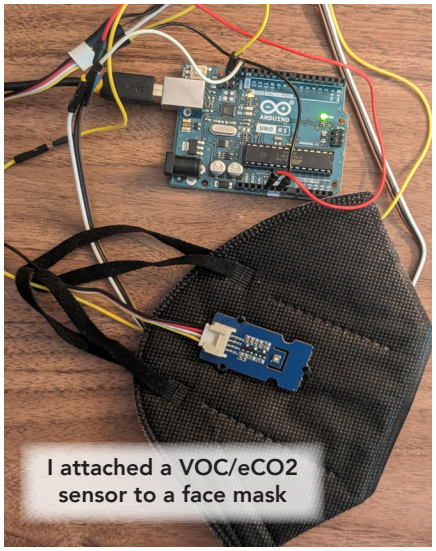
In my body maps, I wanted to express how my body shifts with the environment from the perspective of living with environmental illness. Specifically, I was interested in exploring embodied relations to environmental toxicity. My body has impaired detoxification pathways, which make me very sensitive to environmental toxins, such as mycotoxins from mold or airborne volatile organic compounds (VOCs). Its sluggishness in metabolizing toxins means that if exposed, these toxins will recirculate in my body for days to weeks until they slowly make their way out. When this happens, my body feels sluggish, inflamed, disoriented—and toxic.

In making sense of these embodied environmental experiences, I draw from the concept of transcorporeality, as defined by Stacy Alaimo, which describes material interconnections in which "the body can never be disentangled from the material world" [3:115]. Many scholars have described people with environmental illness as "transcorporeal subjects" whose bodies are sensors in themselves, with the ability to detect / feel / sense invisible and otherwise imperceivable environmental toxins [3, 9, 36, 43]. Here, I explore how digital sensing technologies might intersect, complement, or contradict embodied sensations or sensitivities.

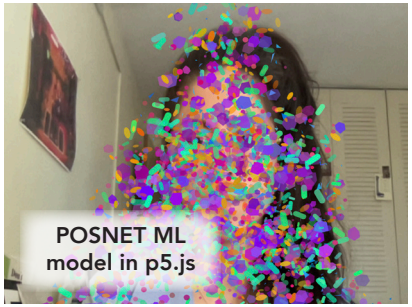
I also draw inspiration from Max Liboiron's theorization of pollution and toxicity, especially around the critique of "assimilative capacity," a concept from Western Science that justifies an allowable amount of toxins to be in any land or human body [48]. Thinking through "toxic burdens" in both land and human bodies illuminates more-than-human entanglements in experiences of chronic illness both conceptually and materially.

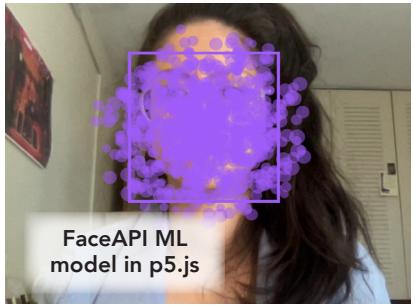
How can we imagine a body map that captures these transcorporeal environmental relations? How can it reflect the messy, pervasive, and embodied feelings of toxicity? How can it resist the flattening of spatial and temporal experiences to express chronicity, delay, disruption, and disorientation?

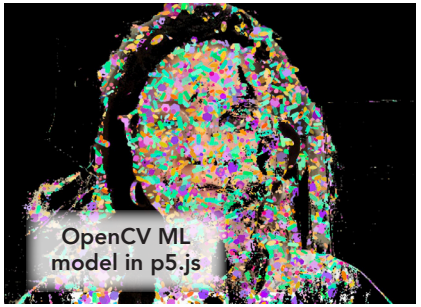
Initial sketches and images for my body mapping concept that explores the messy and complex feelings of toxic exposure and accumulation in the body



Trying out three different ML models in p5.js to experiment with bodily boundaries and how particles attach to bodies







Documenting my experience in three locations and adding subjective interpretations through colors, sizes and shapes

In my experiments, I used VOCs as a proxy to explore airborne toxins. VOCs are organic chemicals originating from a wide range of sources, such as paints, cleaning supplies, and building materials, often found indoors. I attached a VOC/eCO2 sensor to a face mask to detect the toxic particles in my breathing space, capturing the moment they would enter my body through breath.

Using p5.js, I visualized the sensor data to show a diversity of particles floating in space with different colors, sizes, and shapes, representing the heterogeneity of VOCs and environmental toxins more broadly. I then added a video capture to the backdrop of the sketch to show my body and surrounding environment against the particles from the sensor data readings. I experimented with three different computer vision libraries for body detection, including POSNET, Open CV, and Face API. With this, I drew a "boundary" between my body and the environment and populated these two spaces with VOC data readings at different paces: the "environmental space" shows the real-time reading of the VOC sensor while the "body space" shows accumulation over time, as particles build up in my body with each breath.

I documented encounters with VOCs in three different locations: a coffee shop, in my home, and on the porch, while reflecting on my feelings in the moment and speculating on the delayed reactions my body might experience from these exposures. In each location, I chose different combinations of colors, sizes, and shapes to reflect my feelings, integrating my subjective interpretation with the sensor data. These body maps expressively visualize how environmental toxins might enter and accumulate in a body. In the visualizations, particles move with and cling onto my body in the video capture. The boundary between the body and the environment is porous and sometimes blurred. Once too many particles are in the canvas space, the sketch starts to get laggy and glitchy – becoming sluggish itself, akin to a toxic body. These sketches speed up the tempo of toxic exposure to make visible the otherwise "slow violence" of toxicity that insidiously accumulates over time [49, 57]. Seeing my body slowly fill up with particles prompts reflection on how these toxins move through, around, and between various bodily spaces.

4.3 Social and Affective Body Mapping (Tim)

Living with chronic joint pain in my hip for the past few years has transformed my relationship with my body, making me more attuned to its needs and responses. This pain has led me to experiment with ways to manage my symptoms and better understand how my body responds to different stimuli. Samuels' concept of "Crip time"—the process of "listening to the broken languages of our bodies, translating them, honoring their words" [63:3]—resonates with my journey of learning to navigate my pain. This journey inspired me to explore alternate forms of body mapping that might communicate my pain experience to others, including family, friends, and healthcare providers.

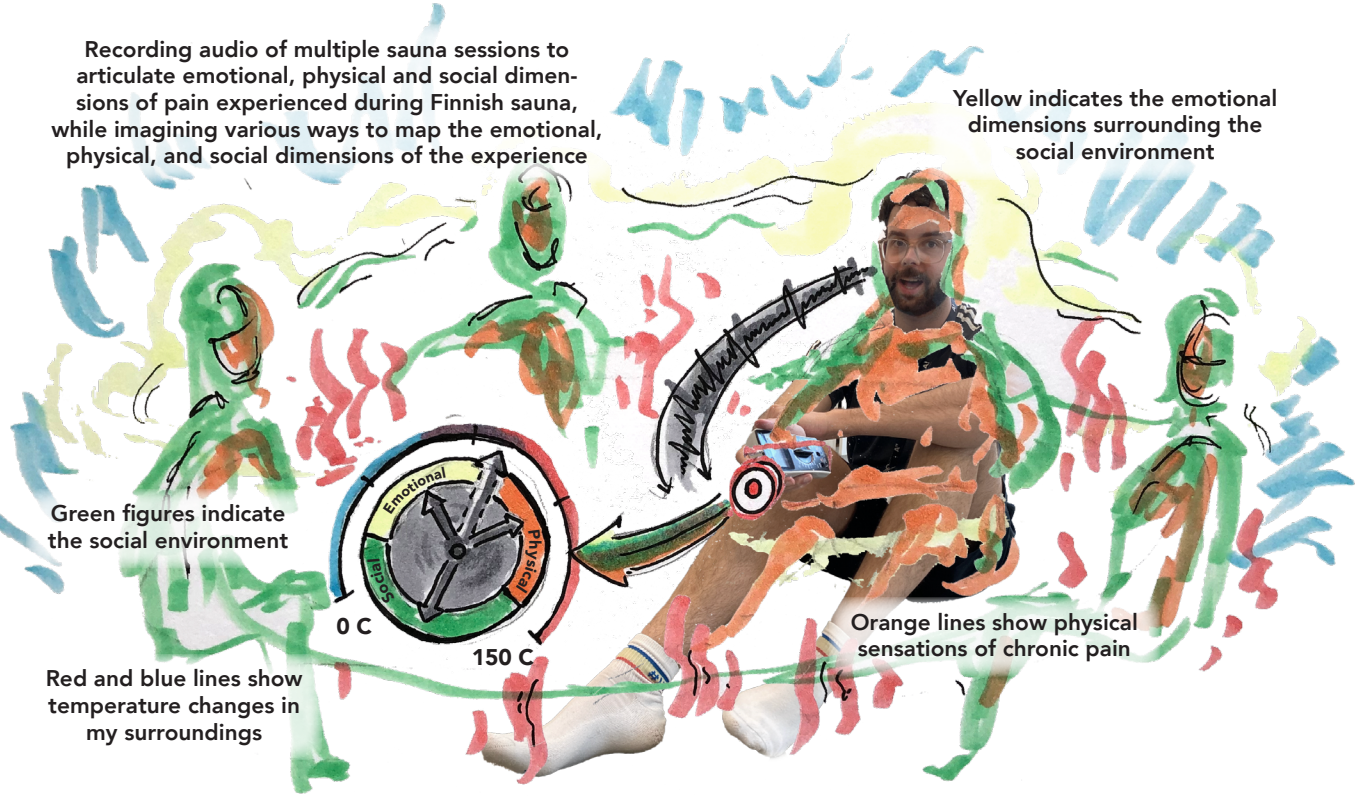
Living in a Nordic country, I have experienced firsthand how environmental temperature affects my joint pain. Cold winter temperatures amplify discomfort, making my joints and muscles feel tense and stiff, while heat provides relief, enhancing flexibility. Research supports the effects of temperature on osteoarthritis pain, highlighting how warmth can ease joint pain [53]. The Finnish sauna has become a significant ritual for me, providing therapeutic warmth that alleviates the harsh effects of winter. This practice led me to consider how temperature-based body mapping might capture and communicate my experiences with chronic pain [55].

To explore this idea, I recorded my own reflections before, during, and after weekly sauna sessions over the course of a month, documenting how my body responded to shifts in temperature, over time [75]. These recordings helped me identify which temperatures, movements, and sensations were most beneficial, fostering a deeper understanding of how heat affected my body. During this mapping process, I observed that pain is not solely a physical sensation; it is influenced by social and emotional contexts. Sauna sessions, especially those with friends, made me more aware of how pain becomes visible in social settings. When I stood up slowly or moved with visible discomfort, well-meaning friends often expressed concern. While these interactions were supportive, they also highlighted the visibility of my pain, making me feel at first self-conscious, but later accustomed to sharing when asked about it. Pain thus became more than a personal experience; it became socially shared and shaped by the reactions of others around me.

My verbal reflections led me to document my experiences with heat visually through a spectrogram, or audio visualization, illustrating some of my collected audio data combined with experience trajectories and body visualizations to demonstrate how temperature and pain experience interact physically, emotionally and socially over time. I used the audio spectrogram as a visual means to show the entangled nature of my verbal expressions about my body and my affective experiences based on sound data, heat and social interactions. I am expanding beyond soma trajectories proposed by Tennent et al. [75] by actively attuning to environmental factors, including the space I am in, its shifting temperatures, and the presence of people around me, while integrating these reflections into my queer/crip body map.

With this mapping exercise the heat from the sauna became a means of self-expression, allowing me to reflect on the shifts in my physical and emotional states through queer/crip body mapping. My experience highlights how pain encompasses not just physical discomfort but also emotional and social facets that are deeply interconnected.

The queer/crip body mapping exercise underscores the need to recognize pain as a multifaceted experience that extends beyond static representations. Chronic pain, as I discovered, is entangled with personal, social, and psychological elements, making it challenging to capture in conventional body maps. This alternate approach emphasizes that pain is an evolving experience shaped by context, relationships, and emotions, factors that a traditional static body map might overlook.



I created a body map of my social and affective experiences over time, using my audio recorded reflections

My voice recordings share spoken reflections, shown in the lighter background lines

These are punctuated by loud sizzles when water strikes hot stones in the sauna, shown in thicker red lines

4.4 Neurodivergent Body Mapping (Karen)

My tendency to push myself to achieve—shaped by both personal and neurodivergent factors—can be rewarding, but often leads to deep fatigue in social settings. This drive frequently leads to exhaustion and low self-esteem due to prolonged effort and social interactions that drain my energy. For this reason, I use the metaphor of a "social battery" to describe the fatigue that comes with prolonged social engagement, shown in my visualizations below, where I express my "social battery" using a literal battery and a tree that grows and shrinks. While this metaphor resonates deeply with me, I recognize that neurodivergent experiences vary widely—this account reflects my own situated experience and is not meant to speak for all.

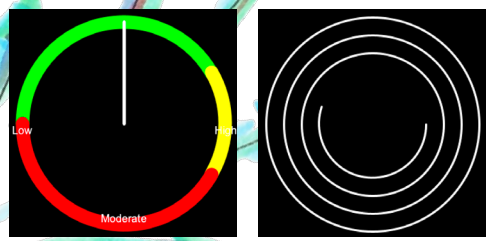
Rather than creating a generic data visualization, I approached these body maps as tools to express how social interactions accumulate in and on my body over time. The growing tree and fading battery are not representations of performance or productivity; they are metaphoric, affective, and bodily. They map how I feel, offering an embodied account of depletion that reflects my lived experience rather than measuring or optimizing it. These visuals are situated, relational, and temporal—key qualities of queer/crip body mapping.

Traditional self-tracking practices in the Quantified Self (QS) movement often emphasize self-optimization, aiming to enhance personal well-being through data collection [50]. While consumer-focused QS products prioritize inward-facing goals of personal growth, the QS DIY community engages in more socially communicative practices, such as sharing personal narratives and experimental data visualizations at show-and-tell events [74]. These events foster mutual learning and community building, often showcasing idiosyncratic DIY devices designed to provoke empathy and awareness [80].

Despite this, researchers like Deborah Lupton critique the QS movement for catering to a narrow demographic, often marginalizing individuals with disabilities, including those who are neurodivergent [50]. This gap inspired me to explore how a queer/crip, specifically neurodivergent, body map could communicate my experience of social exhaustion to others, moving beyond traditional self-quantification toward fostering empathy and awareness. By extending the DIY ethos of QS into the context of neurodivergence, this work bridges personal data narratives with inclusive design practices, encouraging unexpected intersections across communities.

After two sessions with each visualization, I recorded my experiences and reactions. I noted that the tree visualization often prompted more questions, drawing others into conversations about its meaning and encouraging them to reflect on my experiences more deeply. In contrast, the battery icon prompted more immediate recognition of my social energy level, with others adjusting the length and tone of their interactions accordingly, particularly when the battery icon showed low energy. This experience highlighted the potential of visual projections to reduce

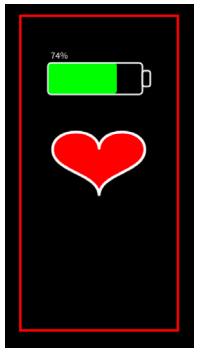
To explore how social fatigue feels in my body, I developed nearly 100 animated sketches—each an attempt to externalize the shifting sensations of depletion during extended social engagement. Unlike traditional static body maps, these animations allowed me to express temporal changes in energy and emotion, showing how fatigue accumulates or recedes over time. These were not just visualizations, but embodied metaphors in motion—mapping my experience as it unfolded.



I connected most with two visualizations: a literal battery and a growing tree. The battery clearly communicated low energy, while the tree mirrored how my social capacity feels—growing, retreating, sometimes dormant. These animations weren't about displaying literal data, but about expressing my internal, felt sense in a way others could intuitively understand. When projected onto my body, they helped me share my experience without over-explaining—offering a visual language that invited connection and empathy.

As I regain social energy, the tree grows, mirroring my renewed capacity to connect

When I'm socially depleted, the tree shrinks and sheds its leaves, signaling retreat and exhaustion

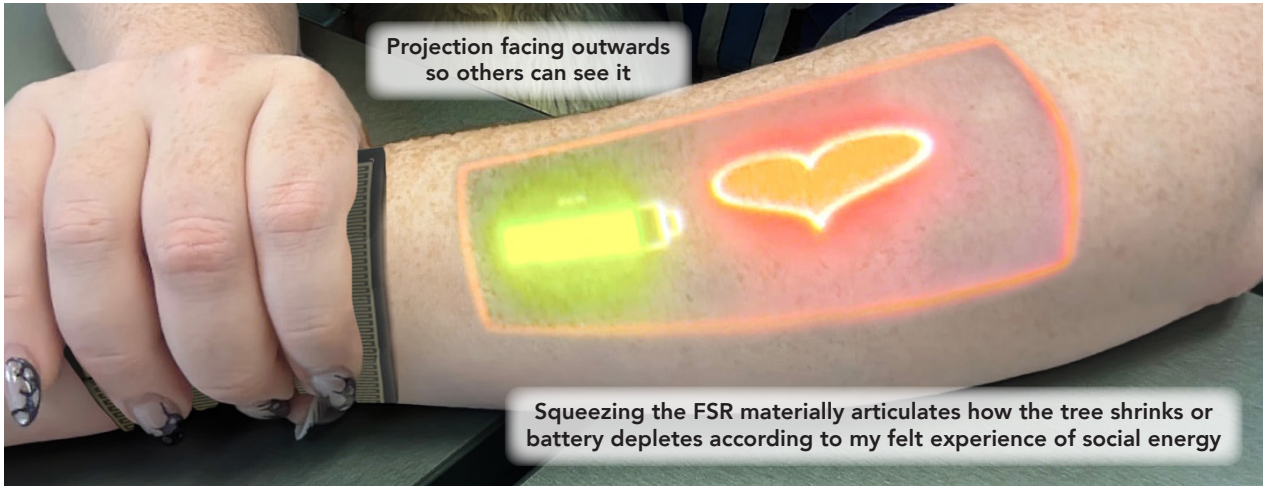


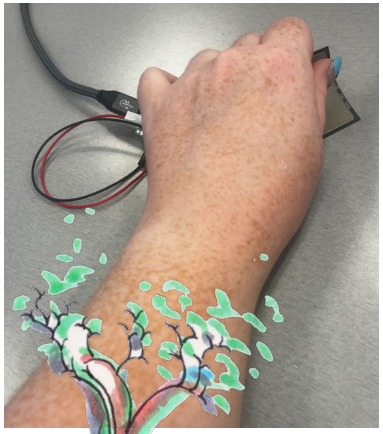
When I feel socially depleted, my heart races—a visceral sign of exhaustion that I express.

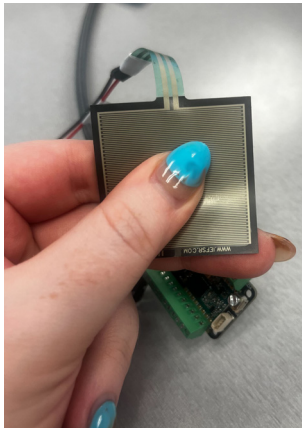
When I feel socially recharged and relaxed, I sense my heart slowing, an embodied cue of calm.

the stigma often associated with neurodivergent traits, such as social fatigue. Through queer/crip body mapping, I found that others became more aware of my need to recharge without requiring me to mask or over-explain my neurodivergent experience. Masking, commonly associated with autistic individuals but also prevalent among other neurodivergent people [60], involves suppressing or altering traits to conform to social norms. The body maps allowed me to externalize my internal experience, reducing the need to mask my exhaustion as others could recognize and respect my social fatigue through the visual cues alone.

This work expands body mapping beyond anatomical outlines to include metaphorical, temporal, and socially entangled representations of neurodivergent embodiment. By mapping fatigue as a growing or withering form and using gestures to influence that growth, my body map resists static notions of health or energy. It also invites design researchers to consider how metaphor, ambiguity, and sensory interaction can be mobilized to communicate embodied experiences that are often invisible or misunderstood. Ultimately, this approach allowed me to share what exhaustion feels like—in a temporal, embodied way and on my own terms—making my experience more visible and understandable to others without relying on verbal explanation.







To create my body maps, I projected both the metaphorical tree and the battery onto my arm and squeezed a force sensing resistor (FSR) to express how I embody social energy. Squeezing the FSR enacts social exhaustion through embodied gesture—each press, hold, or release becomes a material articulation of affective depletion. Rather than quantifying fatigue, the gesture externalizes its intensity through physical expression, making the experience of social drain visible and felt. This embodied interaction transforms internal states into tangible, time-based marks, aligning with body mapping's goal of rendering the invisible visible through somatic form.

5 DISCUSSION

Using collaborative autoethnography, we developed queer/crip body maps as shared discursive artifacts to express vulnerable experiences and relate to each other across differences. We developed our body maps through individual reflection and in collective conversation, which fostered a space of openness and built shared discourse around unique lived experiences. Below, we detail specific qualities of queer/crip body maps, and how they expand traditional modes of body mapping.

5.1 Expressing Queer/Crip Perspectives by Incorporating Biosensing in Body Maps

Queer/crip body maps build on tangible body maps literature [10, 12, 58, 73, 77], particularly experiences mapped in 3D space [77]. We developed queer/crip body maps by mapping sensor data, projecting, and using voice and camera capturing to express situated, felt experiences in real time, over time. Our body maps helped us explore individual queer/crip perspectives, spatially communicate our embodied experiences over time, and engage with alternative perspectives of biosensing technologies.

While using technologies to sense and visualize biodata might seem oppositional to the interpretive and subjective expression of traditional body maps, we highlight how these technologies supported our queer/crip expressions. Namely, they allowed us to temporally map felt experiences, such as Allie's shifting gender, Sylvia's experience of lagginess concurrent with toxicity, Tim's evolving experiences of pain, and Karen's changing social battery. Sensing technologies also enabled tracing our bodies through space, such as Allie's wrist movements through body tracking; and expressing social and environmental contexts, such as Sylvia's mapping of body / environment entanglements, Tim's expression of the

sauna environment, and Karen's reflections on how human interactions influenced her "social battery."

Computational tools were significant in mapping our embodied experiences, opening up ways of drawing not just about the body, but on and with our bodies dynamically. We see these sensing and mapping technologies as akin to their analog counterparts in body maps, like pen and paper [11], fabrics [10], or plasticine [58], while also providing a way to foreground the body's fluidity, instability, and constant flux. We specifically highlight the use of biosensing tools, which offered unique affordances for expressing dynamic shifts in the body and movement in real time [21]. In critically engaging with biosensing, we recognize the rich body of work in the quantified-self movement [50], along with how existing body maps challenge quantification through personal reflection and subjective interpretation on felt experiences. Queer/crip body maps build on these critical engagements with biodata as well as projects that use biodata as a material for soma design [4, 29, 76], to orient biosensing further towards marginalized bodies and push against the use of sensors for measuring, quantifying, and surveilling bodies that do not conform to normative or productive standards [28, 68]. For example, Allie glitches body tracking to express sensations of gender and chronic symptoms; Sylvia challenges the rigid separation between environmental and biodata by mapping air-borne VOC data onto her sensitive body; Tim uses voice recording as an affective form of biodata; and Karen visualizes her "social battery" to push against narratives that emphasize productivity and efficiency [28, 33]. Using sensing in our body maps, we resist idealistic visions of quantified selves aimed at optimization [54], instead envisioning alternative uses of biosensing technologies that elevate the interpretive potential of data to represent queer/crip embodied experiences.

Through queer/crip body maps, we invite critical and interpretive uses of biodata to express dynamic embodied experiences from marginalized perspectives.

5.2 Expanding Beyond Physical Boundaries to Include Social and Environmental Contexts

In queer/crip body mapping, we extend beyond our bodily spaces to encompass their surrounding social and physical environments. In each of our experiments, we trace the body as co-constituted by its environment, highlighting its relational and material entanglements that reflect queer, crip experiences [3, 44]. By enacting this transgression of bodily boundaries, we resist dominant views of bounded individualism and trouble bodily categories. Our queer/crip body maps express disorienting experiences across bodies and spaces [1, 6] to open up alternative spatial perspectives, emphasizing the entanglements of humans and more-than-human environments. For instance, Sylvia's mapping of environmental toxicity with VOC data visualizes entanglements between the body and environmental toxins, challenging the notion of the body as a discrete, isolated entity. Similarly, Tim's reflections on pain in the sauna highlight how physical environments and social interactions actively shape embodied experiences. By troubling boundaries of bodies and environments, queer/crip body mapping pushes against individualistic, self-contained views of the body and encourages us to understand embodiment as porous, situated in context, and entangled with others, both human and non-human.

Through queer/crip body maps, we invite representations of felt experiences that extend beyond bodily boundaries towards social and material environments.

5.3 Embracing Chronicity, Lagginess, and Glitching to Represent Alternative Temporalities

Traditional body maps often fix embodiment into a single, readable moment. In contrast, our queer/crip body maps express how experiences unfold over time by integrating sensors, projections, and expressive forms beyond pen and paper or standardized templates. These methods allowed us to convey subjective, situated, and dynamic temporalities—chronicity, disruptions, delays, or ongoing and non-linear rhythms, that are central to experiences of chronic illness, disability, neurodivergence, and queerness [1, 44, 63]. By integrating sensors and digital components in our body maps, we recorded temporal shifts in our physical bodies that would not have been possible with traditional body maps that are more static by nature. For example, Sylvia showed how the lagginess concurrent with the accumulation of toxic particles both literally and metaphorically represented her experiences of crip time. These included sluggish metabolic pathways amidst her glitchy body's slowness or volatility in response to toxic exposure. Karen's social battery expressed time in a way that grows and wanes non-linearly in relation to others, denoting a temporality inseparable from social and environmental contexts. Tim reflected on how perceptions of pain evolve over time, influenced by extreme temperatures that shift focus from localized to holistic areas of his body. Our autoethnographic practices demonstrate that embodied experiences are ongoing, often chronic and persistent, particularly for "glitchy" bodies that experience time in alternative and uncertain ways. This temporal sensitivity is essential for design fields that aim to address the needs of individuals with chronic or variable conditions, as it allows us to move beyond one-size-fits-all approaches and instead create designs that adapt to diverse, changing needs over time.

Through queer/crip body maps, we invite engagements with alternative temporalities and unfolding felt experiences that challenge fixity.

6 CONCLUSION

In queer/crip body maps, we incorporate sensors to trace somatic experiences directly onto our bodies over time, in situated environments. Our approach expands body maps to center queer and disability perspectives that foreground alternative conceptions of time and space through the interpretive use of sensing technologies and biodata. Queer/crip body maps widen the space for marginalized perspectives, adding richness to how we reflect and articulate our experiences. By highlighting queer/crip time and space, we encourage a shift in design practice towards understanding and communicating the varied, complex ways that people experience their bodies over time, entangled with their environments.

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