

Entangled Reflections on Designing with Leaky Breastfeeding Bodies

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ABSTRACT

Bodily transformations that attend breastfeeding include entanglements of more-than-human materials and agencies. These can be seen in exchanges of physical matter, such as bacteria, that blur bodily boundaries. I present three design explorations of my breastfeeding experiences as entangled: knitting bras for lopsided breasts, transforming milk into fiddling necklaces, and site-writing around breastfeeding. Through spatial and conceptual mappings of the explorations, I propose them as alternative narratives in designing for leaky breastfeeding bodies. I also offer two broader reflections on designing with, for, and among more-than-human bodily materials: *generous absence* and *bodily mappings*. The accompanying reading instructions to this bodily research open for further encounters and reflections between the three explorations.

Authors Keywords

Breastfeeding; leaky; more-than-human; posthumanism.

CSS Concepts

- Human-centered computing-Interaction Design

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INTRODUCTION

Milk is an interesting bodily fluid because it is secreted, not excreted, for another mammal to ingest. This verbal distinction is significant because unlike many bodily fluids, milk is not discharged as waste but is released for sustenance. Although for many humans, breastfeeding is more than just the secretion of milk from a mother to a child. It can also provide comfort and nurturing within the complex social and material relations of care-giving and care-receiving. Inherent to both perspectives is an intricate network of unknowable bodily exchanges and changes.

The transformations that attend maternity include more-than-human materials and interdependent agencies. For example, they involve bilateral exchanges of bacteria and relational processes of hormone stimulation [33]. This attention towards nonhumans is situated within critiques of anthropocentrism [1, 19, 21] that “greatly expands our understandings of the multiple agencies, dependencies, entanglements, and relations that make up our world” [19]. This perspective troubles understandings of breastfeeding as a unilateral transfer and milk as a commodity. In drawing upon Diprose’s notion of corporeal generosity [17], Hird argues that inherent to breastfeeding is a gifting of physical matter, such as bacteria, with the potential for unanticipated outcomes as interdependent human and more-than-human bodies [27]. This gifting as “excess”, as opposed to a closed economy of exchange, challenges cultural notions of what an independent breastfeeding “body” might be or include

as an open leaking and mingling “between self and other, nurture and nature, human and nonhuman, foreign and familiar” [27]. In the context of interaction design, “leaky” bodily boundaries has been used to describe nonhuman systems and objects [3, 24, 43], as well as to refer to how humans move [47] and “spill over” [50] within worlds. In designing with breastfeeding, leaky includes reckoning with more-than-human entanglements that disorders species boundaries and individual autonomy [45].

In the following, I present three ongoing design explorations from my breastfeeding experiences that are grounded within my own sense-making efforts as a mother and designer: knitting bras for lopsided breasts, transforming milk into fiddling necklaces, and site-writing around breastfeeding. Each design is grounded with felt frustrations and personal curiosities towards bodily undoings and becomings that continue to challenge and reframe my own cultural preconceptions and expectations of breastfeeding as a white, cis-gender, North American who resides in Northern Europe. My breastfeeding experiences began in summer 2019 and are ongoing during the writing of this pictorial.

In form, the explorations can be considered Design Memoirs [15] as embodied autobiographical designs that share emotional memories and invite reflexive narratives. They call upon a somatic first-person perspective [31] for intimate access to felt experiences in the designing and sharing within and beyond breastfeeding bodies. While none of the explorations explicitly involve technology,

related research that helps further situate their relationship with interaction design includes: extending human bodies for noticing more-than-human entanglements [38], gut-tracking human microbiomes for reflection on more-than-human “selves” [10], magnifying saliva to share among humans the experience of fertility-tracking [28], and touching human body parts and fluids to produce new knowledge [7, 12, 47].

While I undoubtedly consider breastfeeding an art [49], my intentions are not to advocate for or against it. Instead, my intentions in sharing these intimate designs are two-fold. The first attends to a politics of breastfeeding, and more specifically, breastfeeding as a relational and unpredictable exchange of matter [11, 27] and a valuing of reproductive labor and affect [23, 34, 36, 41]. Within this, I propose alternative narratives of experience for designing within or for uncertainties [16], ambivalences [52], and perceived “choices” [11, 48] of parenting. Yet I also acknowledge that my lived experiences are particular among a plurality.

The second attends to a politics of design, whereby I offer two broader reflections for designing with, for, and among more-than-human materials: *generous absence* and *bodily mappings*. *Generous absence* reframes absence as “nonexistence” or a “lack of” to an inclusion of presence in unfamiliar forms and an openness towards the potential material consequences of design interventions. *Bodily mappings* methodologically approaches bodies as entangled through a focus on layers of relations for subject diversities and layers of activity for ongoing becomings. The two reflections, like my experiences as a breastfeeding mother and designer, are by no means separate, distinct, or complete. The following presentation of them reflects their entanglement within my intentions and among the designs.

Bodily Instructions

In taking advantage of the pictorial format [42], I suggest readers to bodily engage with this research by: 1) physically printing or digitally exporting all pages individually; and 2) arranging pages according to the mapping to the right. Page numbers correspond to the document’s stand alone ordering, rather than the proceeding’s numbering.




These instructions represent my methodology, whereby I first placed the site-writings on pages 4-12 according to their order in the poem on page 3; and then arranged pages 4-12 according to their approximate spatial locations as physical places. I then went through multiple iterations of moving the pages according to emergent themes as I added annotations and photos of the other two design explorations. In doing so, some spatial locations remain physically accurate (e.g. the bathtub is next to the bedroom), and others are shifted in accordance to conceptual relationships between explorations.

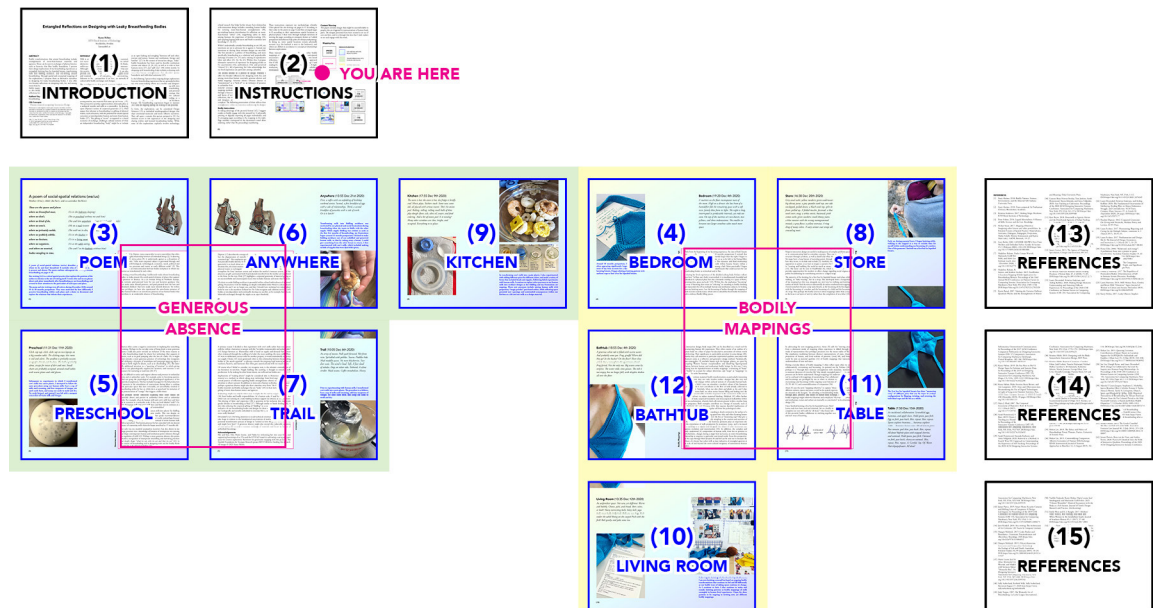
These instructions also intentionally invite other bodily mappings, or mappings refusals, that open for unanticipated encounters and research findings beyond my own two initial reflections. Thus, the mapping below is one possible approach that if followed, I recommend beginning with page 3 and reading from top to bottom, and from left to right. A high-resolution pre-arranged version of this mapping is available as a supplemental file in the ACM Digital Library and at www.kareyhelms.com/pdf/leaky-breastfeeding-bodies.pdf.

Content Warning

This paper contains images that might be uncomfortable to people who are triggered by representations of human body parts. The designs presented have been created as an act of care and love, and it is through this lens that I wish readers to see and engage with this work.

Mapping Key

(PAGE) CONTENT	DESIGN EXPLORATIONS
	 SITE-WRITING AROUND BREASTFEEDING
	 TRANSFORMING MILK INTO FIDDLING NECKLACES
REFLECTION	 KNITTING BRAS FOR LOPSIDED BREASTS



A poem of social-spatial relations (we/us)

Mother (I/me), child (she/her), and co-caretaker (he/him)

These are the spaces and places

<i>where we breastfeed most,</i>	<i>(Us in the <u>bedroom</u> sleeping)</i>
<i>where we don't,</i>	<i>(She at <u>preschool</u> without me and him)</i>
<i>where we kind of do,</i>	<i>(She and him <u>anywhere</u> without me and with a bottle)</i>
<i>where we won't,</i>	<i>(Me on a <u>trail</u> running without her and him)</i>
<i>where we privately suckle,</i>	<i>(She with me in sling at the <u>store</u>)</i>
<i>where we publicly nibble,</i>	<i>(Us in the <u>kitchen</u> visible to neighbors)</i>
<i>where we hesitate,</i>	<i>(Us in a <u>living room</u> with others)</i>
<i>where we negotiate,</i>	<i>(Us at the <u>table</u> eating)</i>
<i>and where we unwind,</i>	<i>(She and I in the <u>bathtub</u> without him)</i>
<i>bodies mingling in time.</i>	

A poem of social-spatial relations (we/us) describes physical locations where we do and don't breastfeed. It includes who of *us*, and not of *us*, is present and absent. The poem outlines subsequent site-writings *around* breastfeeding on pages 4-10.

Site-writing [44] is a critical spatial practice that explores the position of the author in relation to the site of writing itself. I wrote after and on my phone about each place immediately after breastfeeding or not breastfeeding; and *around* to draw attention to the particulars of each space and place.

The poem and site-writings were all written during December 2020, around 19 to 20 months postpartum. They were motivated by how differently I perceive breastfeeding within each place and a desire to document and explore the relations that inform these experiences.



Generous Absence

As put forth by Alaimo, trans-corporeality is a new materialism that refers to the entangled relationship between all embodied beings [2]. In drawing upon Barad's intra-action [9], it understands agency as a dynamism of forces whereby "[t]he trans-corporeal subject is generated through and entangled with biological, technological, economic, social, political and other systems, processes and events, at vastly different scales" [2]. This foregrounds an interconnection between bodies and places in which one another are transformed by each other.

In writing *around* breastfeeding, I deliberately make absent breastfeeding bodies, to make present the social-spatial relations of places that support its presence or absence. As a cis woman living in Northern Europe, this includes paid parental leave for me and lactation guidance that have made easier desired presence, and paid parental leave for him and subsidized childcare that have made easier desired absences. Yet within these privileges, we have also experienced the unwelcome presence of other human bodies or an unwelcome presence of our human bodies that contribute to an undesirable absence of breastfeeding.



Around 10 months postpartum, I noticed one breast often appearing significantly larger than the other. As none of my bras account for a dynamic asymmetry of lactating breasts, I began altering a knitting pattern with uniform cups to knit a bra for lopsided breasts.

Bedroom (19:20 Dec 4th 2020)

A mattress on the floor encompasses most of the room. High on a dresser, the low hum of a humidifier fills the remaining space with a soft mist, faintly blue from its light. The night is long, interrupted in predictable intervals, yet ends too soon. On top of the mattress are two duvets, two pillows, and three indentations. The smaller in between two larger somehow takes much more space.

Bodily Mappings

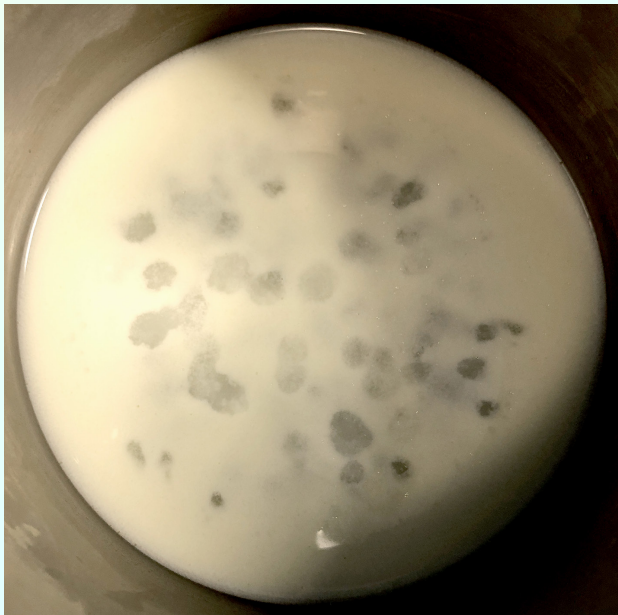
While from the beginning of my lactating experience, the sizes of both breasts were constantly shifting, at around 10 months postpartum I noticed that within their dynamism, the left was generally larger than the right. I began to reflect upon what it means for them, me, or us to be full, to feel being filled, and to fill up space unevenly together. This dynamic and fluid relationship between bodies and spaces includes milk within breasts, breasts within a bra, a bra among bodies, and bodies among a bed. More practically, I began adapting a pattern to knit bras for lopsided breasts that could account for our breastfeeding bodies as networked and in flux.

In sharing her lived experiences of the disabled cyborg body, Forlano reflects upon how “[w]hen one’s body is networked, it is simultaneously bounded and embodied in a physical place but also constantly existing in a space of flows, traversing time, space and scale” [18]. Within this, she emphasizes “becoming” as a way of knowing that resists an “othering” in attending to bodily thinking that transcends the self as multiple human and nonhuman subjects. In looking upon my knitting notes, I see the becoming of bodies through the mapping of stitch increases and decreases, which aims to destabilize fixed bodily boundaries and to embrace fluidly filling spaces.

Preschool (11:31 Dec 11th 2020)

Click, tap tap, click, click, tap on two laptops on a big wooden table. The clicking stops, this room is still and silent. The sandbox is probably vacant, except for shovels and buckets. The ball is probably alone, except for traces of dirt and snot. Small chairs are probably occupied, around small tables with warm plates and cold glasses.

Subsequent to experiments in which I transformed cow's milk into casein plastic, I attempted to follow the same procedure using our human milk: heat a cup of milk until steaming, add four teaspoons of vinegar, stir until curds form, and scoop out curds to mold and dry. No curds formed, and instead I was left with a pungent concoction of warm milk and vinegar.



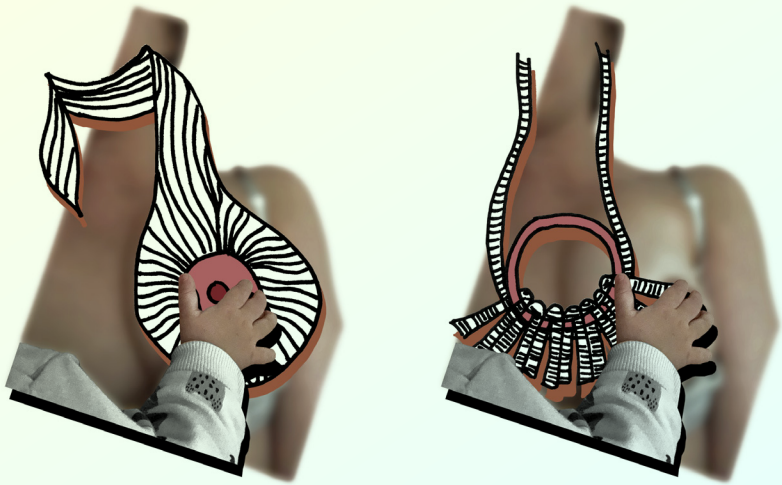
Absence often carries a negative connotation in implying that something is missing. Perhaps in the everyday sense of being kind, a more generous absence could also point towards an inclusion of the many reasons as to why breastfeeding might be absent but technology that supports it present, such as in grief pumping after the loss of a baby. Or, it might point towards a more generous presence of technology that recognizes and celebrates a diversity of nourishing and nurturing practices when a breast or birth might be absent, such as in chestfeeding [35]. The latter calls additional attention to a “queering of lactation” in which giving birth is not physiologically required for lactation, and lactation is not necessary for nurturing or nutrition [20, 37].

Yet, it's difficult to notice and support absence and presence in unfamiliar forms and at unfamiliar scales. For example, prior to becoming parents, I did not grasp the psychological and physiological significance of his material entanglement. This has included massages for the felt production of oxytocin in the stimulation of contractions during labor; a cooking with particular spices that have noticeably, yet unverifiably, resulted in breastfeeding strikes by her; or, while she is at preschool, his imitation of her pronunciation of “orange” that triggers a milk release.

This prompts further reflections regarding what other bodies are materially absent and present in unfamiliar forms and at unfamiliar scales. For example, what do human milk and cow's milk have and have not in common at a molecular scale, if they are both labeled “milk”? Or, what do human milk and cow's milk have and have not in common at a lawful scale, if they are both considered commodities?

In my failed attempt to transform human milk into plastic for fiddling necklaces, I naively expected the same results. This was despite an awareness of compositional differences that guide recommendations regarding when a human baby can drink cow's milk, and perhaps because of her drinking glasses of cold cow's milk instead of warm human milk while at preschool. This known presence for her coincided with my desired absence of expressing milk when she began preschool at 15 months old.

Not only was my material assumption incorrect, but also absent in my design processes was a knowledge of histories of interspecies wet nursing that shape contemporary human and nonhuman power relations through the regulation of milk [41]. Perhaps a more generous absence also points towards a recognition of interspecies nourishing and nurturing practices that deeply shape “*what* we eat, *who* we eat and *how* we eat” [41] in the context of breastfeeding and in designing with and for bodily fluids beyond the scale of human bodies [25].



Anywhere (13:55 Dec 21st 2020)

First, a coffee with an unfolding of birthday weekend stories. Second, a first breakfast of eggs with a side of relationships. Third, a second breakfast of pancakes with a side of work. Or is it lunch?

Transforming milk into fiddling necklaces was motivated by my physical and social frustrations during breastfeeding when she wants to fiddle with the other nipple. While nipple fiddling was evident as early as the first few months of breastfeeding, my frustrations began around 11 months postpartum. I desired to make fiddling necklaces out of our solidified and preserved human milk, so that by taking away a breast, I could give something from the other breast in return. I first experimented with cow's milk, which included making models of nipples that were dyed with spices.

Diprose [17] describes the concept of generosity as “not the expenditure of one’s possession but the dispossession of oneself, the being-given to others that undercuts any self-contained ego”. She emphasizes generosity as an openness to others and to transformation that precedes bodily identity. In the context of maternity, Hird [27] suggests that corporeal generosity is as much about an openness to possibilities as a threat to bodily integrity. To illustrate this, she draws attention to the “very real material processes of maternity” whereby physical matter is exchanged, or gifted. For example, the placenta can gift chemicals that strengthen the fetus’ immune system and weaken the mother’s immune system, and the placenta can gift a premature birth if periodontal microbes from the mother are transferred to the fetus. In this way, Hird [27] highlights a corporeal generosity of material gifting as an uncontrollable and unanticipated excess that includes humans and more-than-humans.

My desire to make fiddling necklaces is grounded within cultural ambivalences of maternal gifting. Frustrations with her fiddling are deeply embedded within Western cultural biases whereby she and I are no longer one, and that I should have reclaimed my independent body by now to be anywhere without her. Yet I also recognize and celebrate our leaky [45] bodies as interdependent and continually altering one another, as for example, bacteria are bilaterally exchanged through the nipple as an open threshold.



A primary reason I decided to first experiment with cow's milk rather than our human milk lay within a hesitation to tamper with the "invisible, immeasurable and unknowable" [41] hunger between us. Mammalian milk is based on supply and demand that is most often evidenced through the suckling of a baby: the more suckling, the more milk. Thus, if I were to deliberately extract milk for another purpose, it would undoubtedly influence our supply. Otomo [41] more generously refers to this relationship between breastfeeding bodies as "the gentle cannibal": a reference towards the emotional and material gifting of nutrients, bacteria, and hormones that often goes unnoticed and with too much notice.

Of course what I failed to consider, yet recognize now, is the inherent contradiction of my hesitation to interfere. Nipple fiddling, like suckling, is thought to stimulate milk production. So by making the other breast absent, our milk and our bodies are transformed.

Implications of "making absent" might be considered akin to Homewood et al.'s [29] removal as a method, in which taking away technology from lived experience can be a critical practice of reflection regarding bodily entanglements: absence as a strategy to pay attention to what is present. In addition to intra-active human-technology entanglements, perhaps a generous absence might also draw attention away from "the body" and towards bodily materials and bodily exchanges that are "leaky" [45] in their inclusion of corporeal gifting of more-than-human matter and agencies.

Technology might not only be taken away, it might also be used to support "being away" [26] from bodies and bodily responsibilities. At a human scale, if used by him with her while I am out running on a trail, fiddling necklaces support my absence as a replacement. This sharing of labor and experience [28] is generous in his inclusion that transcends gender divides in breastfeeding as fluid [37]. Although similar to bottle feeding [34], it also risks reducing the corporeal gifting of "fiddling" to a commodity. These conflicts are indicative of our breastfeeding bodies and designs for them as "living artefacts" [32] that are "ecologically and socially embedded in everyday life [...] in a biodesign process that is never really finished".

Devendorf et al. [16] bring attention to social-technical constructs of good parenting that take shape in relation to the fundamental uncertainties of mothering. They highlight the potential transformative process of design to "remind us how things are, were, might be, and might have been". A generous absence might also extend this vulnerable openness of intra-action [9] towards a constant exchange of materials and forces in futures of unfinished becomings.

Acknowledgements

Her and him. Mai, Marie Louise, and Nadia for welcoming her into your lives, and supporting becomings of us. Ylva and the KTH IxD team for cultivating a caring and open space for creative exploration. Reviewers for generously engaging with this pictorial. The Swedish Foundation for Strategic Research project RIT15-0046 for funding this research. All images © 2021 Karey Helms.

Trail (10:05 Dec 6th 2020)

An array of moons. Pulls path forward. Wet from rain. Sprinkled with pebbles. Swans. Puddles hide. Mud muddles paces. No more blueberries. Two deer wait. The wind is loud. Soft. A fast cloud of exhales. Dogs on either side. Tethered. A silent stroller. Plaid season. Coffee metabolizes. Heavy.

Prior to experimenting with human milk, I transformed cow's milk into casein plastic. The procedure is as follows: heat a cup of milk until steaming, add four teaspoons of vinegar, stir until curds form, and scoop out curds to mold and dry.



Store (16:30 Dec 20th 2020)

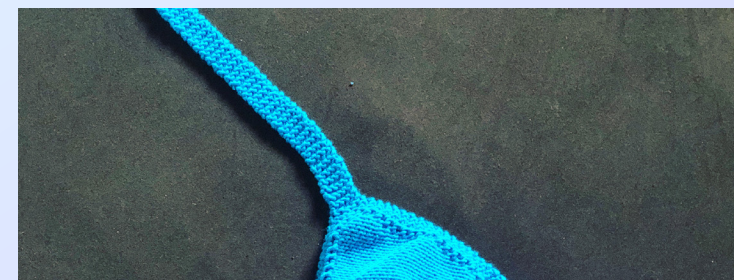
Grey wool socks; yellow sneakers; green underwear; big skinny jeans; a grey spandex tank top, one side unclipped, pulled down; a black wool top, split in front, pulled up. A folded muslin, fastened; a blue wool cover, snug; a white onesie, buttoned; pink cotton socks; green sneakers; small skinny jeans; a blue sweater with the wrong monogrammed initials; a grey fleece; a yellow overcoat. A ring sling of many colors. A navy winter coat wraps all, concealing most.

Maps in interaction design are useful in making sense of complex problem spaces or in communicating hard to articulate concepts. They can provide clarity and structure through synthesis, as well as distill and refine through representation. Yet maps have a long history of narrating power through what they choose, or how they invite, to include and exclude [5]. Similarly, maps can also be used in opposition to power, or as ways to reopen a narrative for revision and remaking in “creating and building the world as much as measuring and describing it” [13]. The latter can be seen in FeedFinder [8], which is an application that provides opportunities for mothers to affect change regarding social stigmas of public breastfeeding by contributing reviews to a digital map.

The majority of the knitting for a first bra for lopsided breasts took place while walking, or “baby-wearing”, her in a wrap. This developed from a recognition of her sleeping best this way, alongside my own love for walking and knitting, neither of which I had the time to substantially do unless combined with napping. A stitch somehow became a step and a breath, as the becoming of the bra aligned with the becoming of a mother and the becoming of a child and the becoming of a map. Thus perhaps this bodily activity is about mappings rather than a map, as the focus is on layers of activity rather than the completion of an artifact [13].



Early on during parental leave, I began knitting-while-walking as she napped as a way to reclaim time for myself within understanding my becoming of a mother. One of the garments I knitted was a first bra for lopsided breasts.



Kitchen (17:55 Dec 9th 2020)

The oven is hot, the stove is hot, the fridge is briefly cool. Music plays. Stickers stuck. Some new, some old, all placed with serious intent. This? An onion peel. Rolling, rolling, rolling small balls of blue play-dough: flour, salt, olive oil, water, and food coloring. And a bit of onion peel. Is it raining? Many other windows are close, bright, and occupied. Everything to its place.



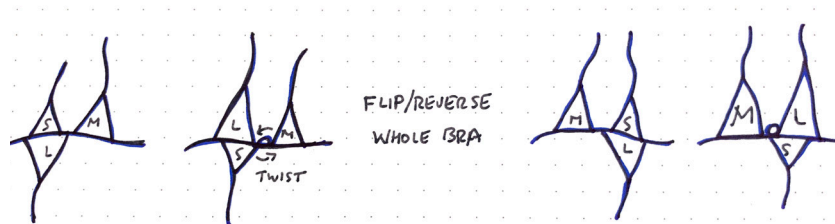
In transforming cow's milk into casein plastic, I also experimented with adding different spices for different colors, and made a variety of forms that included beads and nipples. Following failed experiments with human milk, I continue to explore other processes to use human milk into necklace designs as her fiddling and my frustrations are ongoing. These new processes include mixing human milk with proprietary "magic powder" purchased online, while reflecting upon potential new openings and unintended consequences within our kitchen as a lab and our milk as a design material.

In advocating for new mapping practices, Awan [5] calls for “moving away from a dominant mode of mapping where experience is elided through a mode of representation that privileges precision over the messy reality of life”. She emphasizes mediating between abstract representations of pasts, shared projections of futures, and lived realities of presents. Lived, life, and living could be seen as material qualities [32] of bodily mappings that transcend understandings of time and space.

During everyday labors of bodily mapping, I often reflect upon what we are collaboratively overcoming and becoming. As pointed out by Forlano [18], perhaps it is “through their intimate entanglement with mundane, moment-to-moment decisions of everyday life” that deeply entangled pasts, futures, and presents can be better understood. Though mappings for understanding should not be confused with mappings of essentializing. Our collaborative overcomings and becomings are privileged by me as white in relation to uncollaborative overcomings and becomings within ongoing racial histories of wet nursing [14, 23, 39, 40, 51] and commodifications of compassion [36].

Awan [5] uses the term “mapping otherwise” to capture “those whose lives span different cultures, spaces and times, as well as the spatial experiences of those who are situated at the margins”. In attending to breastfeeding bodies as networked through pasts, presents, and futures of human milk exchange, I wonder how bodily mappings might otherwise illustrate and complicate “the ways the human and nonhuman, nature and culture are mutually co-constitutive” in decolonizing design [19].

I have finished knitting a first bra for lopsided breasts. Stitches have been cast off. Loose ends have been tied and trimmed. Yet as a bodily mapping, it is far from complete nor ever will really be “all done”. Like future table scenes or the pages of this pictorial, bodies collaborate in stitching together new ways of showing and new ways of knowing.



Bodily Mappings



The first bra for lopsided breasts has three “measuring cups” of different sizes that can be worn in various configurations by flipping, twisting, and reversing the individual cups and the bra as a whole.

Table (7:50 Dec 15th 2020)

An incidental collaboration: Scrambled eggs, hummus, and apple slices. Hold spoon, pass fork. Egg on fork, pass back. Bite, repeat. Bite, repeat. Spoon explores hummus... hummus explores table... hummus leaves scene. Sliced tomato joins. Pass tomato, peel skin, pass back. Bite, repeat. All done! Refresh plate with snipped cherries, and oatmeal. Hold spoon, pass fork. Oatmeal on fork, pass back, cheery on oatmeal. Bite, repeat. Bite, repeat. A. Careful. Sip. Of. Water. Hairclipsipofwater. All done!

Bathtub (18:55 Dec 4th 2020)

*A generous white tub is filled with warm water.
And probably some pee. Frog, giraffe! Where did
they go? In the bucket? On the floor? There they
are! Is that a noise from the apartment above?
Frog farted. Not the only one. Big waves come by
surprise. The water stills, time pauses. The tub is
not empty, but no longer full, with droplets shaken
all over the floor.*



(12)

In interaction design, body maps [30] can be described as a visual tool for documenting human felt experiences. They often consist of an outline of a human body on a sheet of paper for descriptive annotation of written words and drawing. Their significance is particularly prevalent in soma design [30], whereby they call attention to particular experiential qualities associated with a human's soma as a reflective and generative design method. Paradoxically, trans-corporeality [2] similarly begins with the human subject, yet aims for disrupting Western human exceptionalism and dissolving figure/ground relations between human and nonhuman bodily beings. In this way, I view knitting bras for lopsided breasts as bodily mappings: a reframing of "body" as "bodily" to account for subject diversities, and "maps" as "mappings" to account for active becomings.

Bailey [6] positions maternal bodily transformations as particularly interesting because of how they not only involve surface changes but also very real internal material changes within cultural notions of a bounded human body. For example, a baby's cries can stimulate a mother's release of the hormone oxytocin, which in turn contributes to the flow of milk already collected in the breast [33]. Similarly, when our skin slides and glides as she and I play together in a warm bath, we often notice breasts filling and leaking into the tub. This hormonal reflex is further important in the contraction of the uterus following delivery to reduce maternal bleeding. Shildrick [45] offers further examples of leaky corporeal boundaries and intracorporeal malleability within fetal microchimerism, whereby fetal cells remain present within a mother long after pregnancy. Both examples contribute to a lineage of research, such as by Shildrick [46] and Haraway [22], that exposes harmful implications of maintaining and protecting a singular self from the pathological other.

While a bra in its everyday understanding is clearly oriented to the surface of a bounded human body, in reflecting upon how, why, and when lactating breasts physically take space, I began to view the bra as "measuring cups" that give a material surface to a complex bodily mingling in the creation and secretion of milk. In addition to oxytocin, the hormone prolactin plays an important role in the stimulation of milk production by mammary tissue, and is increased by a suckling on a nipple; and alongside the release of other hormones, can suppress ovulation and menstruation [33]. In addition, the complex and barely understood [4] composition of human milk, from fats to proteins to carbohydrates, changes during a single feed and across an entire breastfeeding relationship in response to particular nutritional needs. From this perspective, the bra cups through their dynamic fit and feel can be seen not to measure the fullness of a breast, but rather milk as data indicative of entangled agencies at the scale of and beyond the socio-cultural imaginary of autonomous human bodies.

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