A Speculative Ethics for Designing with Bodily Fluids

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Figure 1: An example of a "performative texts" that shows how words visually and spatially perform as material compositions, and how as material compositions they inform verbal readings aloud

ABSTRACT

This essay performs a speculative ethics in designing with a researcher's own bodily fluids. This is through the creation of "performative texts", which are autoethnographic accounts of past experiences in which written words perform through visual and spatial compositions alongside verbal readings aloud. I present three performative texts about moments of discomfort in designing with milk from my own breastfeeding relationship. They are to reflect upon felt experiences of potential harm and to understand social and material relations of care. From these I offer three possibilities for how HCI might consider the ethics of first-person research in attending to more-than-human entanglements: unsafe spaces, situated escapes, and censored inclusion. These possibilities and the approach of performative texts contribute to research for more sustainable futures by exploring the decentering of humans through an intimate engagement with the self.

CCS CONCEPTS

• **Human-centered computing → Interaction design theory, concepts and paradigms**.

KEYWORDS

ethics, care, bodily fluids, biomaterials, milk, breastfeeding, autoethnography, performative, more-than-human, research-through-design

1 INTRODUCTION

In this essay, I present how I engage with my ethical position in designing with human bodily fluids, and more specifically, with our milk from my own breastfeeding relationship. This is through the creation of "performative texts" that revisit moments of discomfort to unpack how I navigated potential harm, and how I speculate about ethical possibilities in designing with a person's own bodily fluids. This research is of importance for HCI within the intersection of human bodily fluids as a design material [13, 31, 41, 66, 70], attending to more-than-human entanglements [42, 44, 47, 69, 72],

and navigating the ethics of first-person research [15]. This intersection matters within aims to decenter the human through an intimate engagement with the self for more sustainable and just futures [10, 24, 49].

HCI research is expected to follow procedural ethics that are based upon institutional guidelines and formal approval processes [1]. These procedures operate with the intention to avoid the harm of research subjects, and in particular, people and communities that are considered vulnerable populations. Yet the standardization and universilization of best ethical practices by governing norms and moral principles can limit and prohibit qualitative research [9, 12]. For example, this includes the classifying of all children as vulnerable that contributes to a research gap on children and conflicting guidelines among overlapping research domains that restricts collaboration [53]. Furthermore, within an entangled research ecology as characterized by fourth wave HCI [27], it can be difficult to locate the responsibility and accountability of potential or actual harm.

In response, recent research has reflected upon how ethics in HCI is inseparable from design and might be reconsidered as situated and fluid [28]. This includes accounting for "in the moment" decisions in socially-oriented research [40], considering how design shapes particular bodily movements and experiences in situ [23], an articulation of purposeful vulnerability as necessary within a design process [60], and illustrating transformations of people over time [65]. Markham proposes attending to "methods as ethics" in recognition that research "involves multiple moments, decisions, actions, and operations that can result in outcomes that have potential harm for people" [53]. This involves more closely regarding the particular choices that a researcher makes, and doesn't make, as the place where ethics happens. These decisions inform subsequent actions taken as methods, and although often seemingly mundane and even perhaps trivial, have consequences small and large. These approaches are not advocating against procedural ethics altogether, but rather opening for discussion regarding how ethics takes form within everyday research decisions and design activities. In the case of designing with human bodily fluids, and in particular a researcher's own bodily fluids, the contextual and intimate relations that inform particular choices are essential to consider amid a lack of procedural guidance, acceptance, and adaptability.

The remainder of this paper is structured as follows: I first position my research situation by describing an autobiographical design project on breastfeeding that includes material engagements with human and cow's milk. The human milk can notably be considered my own as a cis-gender lactating parent, although throughout the paper I refer to it as "ours" in regards to my partner (he/him) and child (she/her). I next ground my understanding of ethics as relational within a feminist ethics of care, and illustrate the associated procedural ethical challenges and their shortcomings. From this, I describe my process of creating and rehearsing "performative texts" (e.g. see Figure 1), which are first-person hand-written accounts of past experiences in which the words themselves also perform through visual and spatial compositions. The verbal and material performances recreate situations within a politics of making the everyday visible and as ongoing invitations in understanding sociomaterial relations of care. I then present three performative texts about past moments of discomfort that I consider critical to my

research ethics of designing with bodily fluids. Within each, I motivate a revisiting of the moment, and reflect upon felt experiences of potential or actual harm, and performances of care in research decisions. To conclude, I discuss a speculative ethics of designing with bodily fluids that opens for a consideration of unsafe spaces, situated escapes, and censored inclusion.

2 MY DESIGNING WITH BODILY FLUIDS

While my research has also investigated my own urinary routines [36] and how human bodily fluids more broadly contribute to multispecies flourishing [39], the following focuses on a particular project in relation to my breastfeeding experiences.

2.1 Project Overview

In early 2020 at around ten months postpartum, I began designing within my breastfeeding relationship. This has included three design explorations: knitting bras for lopsided breasts, transforming milk into fiddling necklaces, and site-writing around breastfeeding. The first is the knitting of bras to account for a lopsidedness in breasts as they shift in size during lactation. The second is the making of necklaces for my child to fiddle with while breastfeeding instead of fiddling with the other nipple. I desire to make them out of our solidified and preserved human milk so that by taking away a breast, I can give something from the breast in return. The third is a poem of places we do and don't breastfeed, and an associated series of short texts that illustrate how these physical locations support its presence or absence. The first two explorations were not initially intended to be research, and instead were grounded within genuine sense-making efforts of my breastfeeding experiences. As a white, able-bodied, cis-gender woman from the United States and who resides in Sweden in a heteronormative relationship, I am privileged by social, economic, and cultural structures that have contributed to my breastfeeding experiences being supported, possible, and desirable. These privileges also contribute to the possibility of designing for and writing about breastfeeding. The third exploration was also personally motivated, but from the beginning was understood by myself as research as it was subsequent to the other two being "brought in" and was inspired by an academic course that I was taking at the time.

These three explorations can be understood as research-through-design [30], which is based upon a generative making and design examples as forms of knowledge production. More specifically, they are autobiographical designs [56] of which I am both the designer and user of the artifacts being studied, and from which there is an intimate access to lived experience and emotional narratives [17]. Although none of the explorations directly involve technology, as positioned in previous publications [37, 68], they contribute to the field of interaction design regarding a designing with more-than-human materials and also hope to provide alternative narratives in the design of breastfeeding technology.

In Figure 2, an overview of what my design process looks like can be seen. Figure 2a shows me setting up my breast pump equipment in an office makerspace prior to securing a private space to express milk for my child to consume. As explained in previous publications [e.g. 68], milk has never been expressed for research, yet rather used by research upon no longer being consumable by my child.
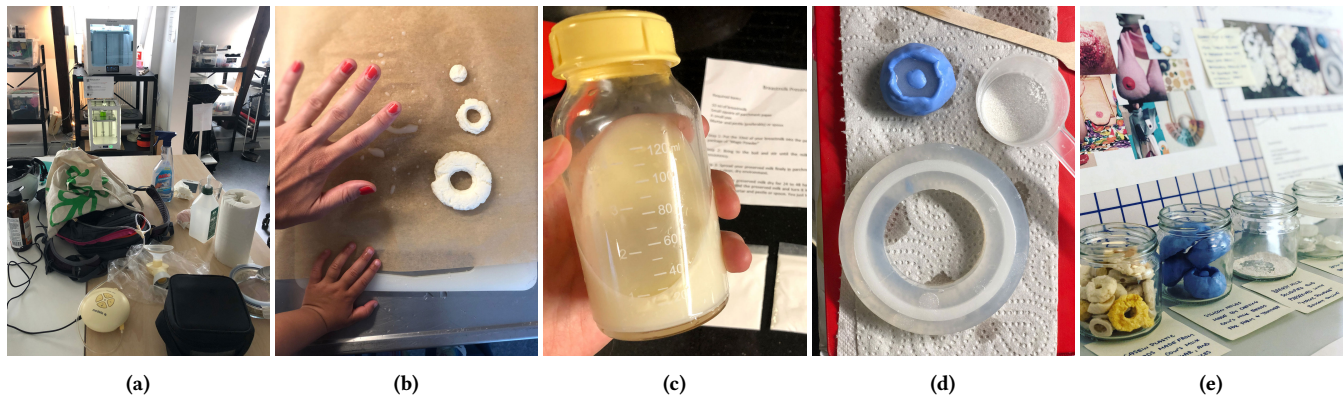
(a) (b) (c) (d) (e)

Figure 2: This is an overview of what my process of engaging and designing with our milk looks like and includes: expressing milk (a), material experiments with human and cow's milk (b, c, and d), and research exhibitions

Thus, it has been expressed at work to be brought home. Figure 2b is of myself and my child making beads for fiddling necklaces out of cow's milk at home by following recipes in kids' STEM experiments [e.g. 63]. Figure 2c is a photo of an expired bottle of our milk being measured before being mixed with "breastmilk preserving powder" bought from the online craft website Etsy [54]. Figure 2d shows the making of beads in my kitchen by mixing our solidified milk with resin in silicon molds that were store-bought and home-made by casting cow's milk beads. Figure 2e is from a small team exhibition at work in which I displayed various material experiments alongside design mood boards.

2.2 Research Ethics

I understand research ethics to be relational within a desire to avoid doing harm. Relational ethics is a concept for research practice that emphasizes mutual care in research as an ongoing process and understands knowledge as constructed within situated and relational practices of difference [21, 33, 58]. It contrasts from procedural ethics that are grounded within universal principles and moral authority that often guide formal ethical guidelines and approval processes. As first described by Gilligan [32], morality is situated within conflicting responsibilities rather than competing rights, and thus requires a relational and contextual mode of thinking. This conception grounds ethics within activities of care that include everyday judgements and maintenance for the well-being of humans [67] and nonhumans [61]. This relational approach to ethics is particularly important in acknowledging bodily, affective, and aesthetic ways of knowing as legitimate and essential in contributing to social justice and change [19].

In this paper, I focus on research ethics of 1) breastfeeding research about myself that broadly includes all three explorations, and 2) specifically designing with our human milk in the making of fiddling necklaces. The first is grounded within conversations regarding the ethics of research focused on the self, such as autobiographical design. Neustaedter et al. [55] emphasize how designing and researching at home can cause potential harm to loved ones and everyday routines. Desjardins and Ball [15] highlight various ways that researches have navigated a lack of formalized standards.

This includes open and ongoing discussions with family members [e.g. 55], receiving consent from those who can [e.g. 38], using pseudonyms or pronouns to preserve anonymity [e.g. 35], and obscuring visual images to protect identity. In broadly researching my own breastfeeding experiences, I have followed these recommendations through frequent and active discussions with my partner (who is also my child's father and co-caretaker), which includes consent from myself and from him regarding how we individually and as a family feel about my research. Since our child is not currently able to give consent, a well-known shortcoming of procedural ethics, this also includes speculating on how she (and him and I) might feel in the future about my sharing. Our discussions take place throughout design work and prior to research dissemination that includes submitting publications and giving academic talks. In formal dissemination channels, such as publications, I also obscure his and her faces and names.

The second is grounded in researching with human bodily fluids. The Swedish Ethical Review Authority [2] requires formal approval of research performed on biological material from a living human if it can be traced back to that human being. This implies that the material will be stored (banked) in a research setting and analyzed to produce data about a human body. It also does not acknowledge a situation in which the point of the biological material being researched is that it is traceable to the researcher, such as in first-person methods, or that the data produced might be the felt experience of it as a design material. Furthermore, approval must be obtained before research begins. This is particularly difficult relative to the uncertainties of breastfeeding [11] and parenting [16], whereby it can be difficult to know and plan in advance what might be genuinely needed now in caring for loved ones. These guidelines can be seen to prioritize bodily fluids in scientific knowledge production as merely data about human bodies, rather than accounting for a diversity of lived realities and agencies that warrant such data meaningful [62]. This is perhaps an important distinction between mainstream and feminist bioethics in which abstract principles of the former "seem far removed from the material and often mundane context in which biomedical encounters take place" [64].

3 PERFORMATIVE TEXTS OF CRITICAL MOMENTS

Performance as a method in qualitative research and artistic practice is part of a long history of inviting others to experience an experience [48]. This performative turn can be described as "in response to bodiless voices [...] and voiceless bodies who have not always been allowed to speak" [20] as marginalized people and among absent topics. In autoethnography, this often takes form as first-person textual accounts of an experience that are read, and reread aloud to recreate a situation in a way that can be truthful, evocative, and therapeutic for oneself and others in sharing [14]. Examples of performing autoethnography included The Vagina Monologues [22] and Alexander's on racism and classism [6].

Performance is similarly seen in histories of autotheory as "modes of working that integrate the personal and the conceptual, the theoretical and the autobiographical, the creative and the critical, in ways attuned to interdisciplinary, feminist histories" [25] of disclosing lived experiences in advocating the personal as political [e.g. 4, 43, 50]. As expressed by Ellis [20], performance is less about the accuracy of remembering an experience, and more about the emotions that come from reading as rehearsing a dialogue. In this way, the text itself can be a part of composing a performance for oneself and in inviting a nuanced and lively engagement from others beyond traditional forms of research dissemination [14]. My approach differs from related practices of performative texts and writing [51, 59] through drawing attention away from only the words as language in making these experiences "real" [8], and towards words as a discursive material in understanding relations among bodies of text and bodies of fluids.

The particular process I follow is inspired by an exercise during a PhD course I took in mid 2021. The course was *Autoethnographic methods: Building ethnographic reflexivity through creative arts-based practice* [29], which was led by Lisbeth Frølunde from Roskilde University as the course responsible. It was grounded within ethic of care, interpretive sociology, and anthropology; and it introduced a mix of group and self-guided activities to cultivate researcher reflexivity. In particular, these activities drew upon arts-based approaches, such as experimental writing, verbal performances, and video collages. One of the activities was the writing and performing about moments of discomfort or potential harm in research, during which the first text was created.

The process is as follows. First, I hand-write in my sketchbook about a moment of discomfort and potential harm in relation to designing within my breastfeeding relationship and/or with our milk. This is inspired by the notion of critical junctures [52]. The writing time is limited to 30 minutes to keep it at the level of a "moment" as a brief and exact period of time. I then "perform" the text by reading it aloud twice. The writing of the texts by hand, as opposed to on the computer, is to slow down the writing and allow for the text to also "perform" on the paper. For example, this can include writing words horizontally and vertically, turned at different angles or with varying spaces in-between, and even physically manipulating the paper itself to play with text composition. The reading of the texts aloud is to experience how it feels to intonate and animate the moment. Two readings create an opportunity to either remake or find new meanings through re-performing [20].

The first moment was performed to two classmates in the aforementioned PhD course, and all subsequent moments were read aloud only to myself. This switch to self-performing was because I do not want to commit to sharing my experiences of discomfort to an audience, which might inhibit which moments I choose to revisit. This decision aligns with not approaching the exercise as about explaining or justifying particular decisions as research "data" to other people, but instead as a process-based activity to more deeply think with the critical moments encountered and the potential relational impacts of the decisions I make. As such, the readings aloud are not recorded. Following the two self-performances during which I pay close attention to how it feels to read them aloud, I highlight key words and phrases that are then used to performatively write broader reflections. This includes asking myself questions such as: Why did I choose to revisit this moment? What discomfort was felt and why was it critical? How did it feel to read it aloud, and read it aloud again? What role did the text play in the writing, reading, and performing of this moment? What side-effects, impacts, or new relations should I think about?

3.1 A First Performative Text

The first performative text revisits a time when I used a chemical agent purchased online to preserve and solidify our milk at home. The first page in Figure 3a begins by describing the scene, which includes me at home without him and her. I am in the kitchen alone together with a bottle of our breastmilk that has been accumulated and is no longer consumable, and with packets of preservation powder that are labeled as "magic powder". I indicate that I've done this once before and I am increasing the scale of the experiment by using multiple packets at once. At the bottom of the first page I list the required items. On the second page in Figure 3b I list the instructions with my thoughts annotated in parentheses. In the middle of that page, my thoughts are spatially distributed and alongside the inner margin I indicate the action (stirring) that I am doing. The instructions are interrupted by a description of actions and thoughts at the end of second page and beginning of the third page in Figure 3c. The text ends with the final step of the instructions, which is the intended results as described on the actual paper instructions from the supplier that "turn it into a very fine powder [called] 'Mommy love dust'".

I chose to revisit this moment because it was a time when I felt my design work could be of material harm to my child, my partner, and myself. This was a critical point in deciding if and how I would proceed in experimenting with our human milk. Prior to the particular experiment described, I had tried and failed to solidify our milk by following the same recipe used to turn cow's milk into casein plastic. This process only involved adding vinegar to heated milk, which are ingredients I feel familiar and thus comfortable in handling at home. In response to that failure, I had purchased what is referred to as "breastmilk preserving powder" online through the craft website Etsy [54], and which I had originally hoped to avoid because the ingredients are not disclosed. If the ingredients are toxic to a human, I did not want my child to be fiddling with the final result as possible beads on necklace. I had previously used a small "dose" (i.e. one packet) of the powder as a test to see if it would successfully solidify our milk, and it did. Both the first and
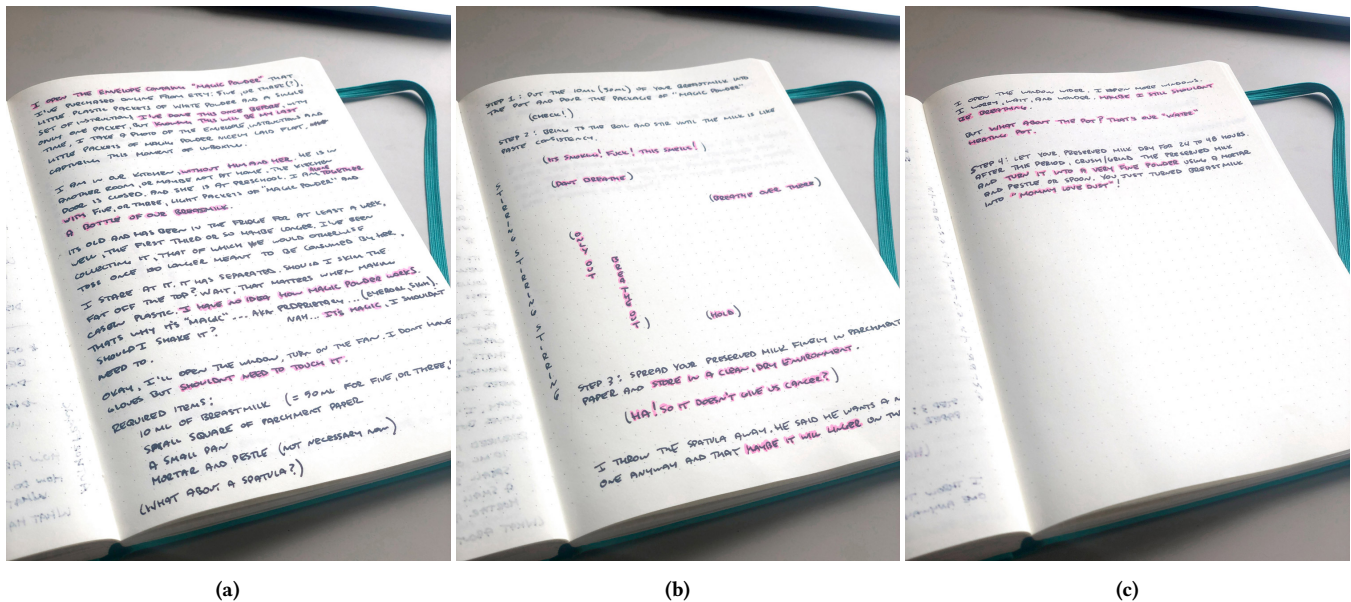
Figure 3: Images of a first performative text that revisits a time when I used a chemical agent purchased online to preserve and solidify our milk at home.

this second time, I checked with my partner regarding his thoughts and he also expressed concern with not knowing the ingredients and if they might contaminate our kitchenware. We wondered, "What about the pot? That's our water heating pot", but reasoned that stainless steel is supposed to be the least chemically reactive material in cookware, and since the powder was bought from a craft website, perhaps it would be okay to use. During this second time, the process resulted in emotional distress as I noticed in panic that it's smoking and fuck this smells! My fear of harmful toxins to all of our bodies seemed to be true because they were being distributed throughout the air.

In verbally performing the text, there was an immediate hesitation that was in contrast to a promising first action: I open the envelope containing "magic powder". My performance of the first page felt as dense as the text looks: as if I wanted to avoid the remainder of the actions by describing the details I know to be "true" and "safe", yet also perhaps knowing more than I claim. That is, I have no idea how magic powder works but already knowing this will be my last time using it too. There is a clear recognition that I should be avoiding the unknown promise of it's magic as possibly being chemically harmful to us, yet also a recognition that it is also unknown how long she will breastfeed. It possibly being my last time doing this experiment and risking material harm is situated within a competing desire to preserve our precious experiences of breastfeeding through the solidification of milk, whether she should or shouldn't need to touch it. The composition of the text radically shifts on the second page in the four steps given by the instructions. My bracketed thoughts, although relatively few words, occupy most of the page as they are spatially distributed and written in various directions. The visual rhythm disperses how I read the text aloud as there is not a clear flow between words to form a linear narration. This placement of text accentuates unclear beginnings and unclear

endings of when and where material harm might take place despite the setting of boundaries by establishing what people and objects are physically present in my experimenting. While both my child and partner were not present to breathe in the smoke, my subsequent panic and regret was situated in not knowing how maybe it will linger in the air or be materially shared with her in subsequent milk production by me despite my attempts to don't breathe, hold, or breathe over there. In this critical moment, I did decide that I will continue experimenting with our milk, but with less focus on the particular milk and how I might materially transform it through unknown ingredients. Instead, I decided that I will attend more to what makes it "ours". This might include collaborating together in spaces and with materials that could lead to the preciousness that I also desire in making fiddling necklaces.

3.2 A Second Performative Text

The second performative text revisits two different encounters during the same academic event. The pages of my sketchbook are vertically divided in half to visually illustrate the encounters as being separate yet related at a critical moment. On the left side is the first encounter, and on the right side is the second encounter that occurred soon afterwards. What can be considered the top page is a description of the scene that includes who is present and the intended topic within the broader event (Figure 4a). Gaps in the text indicate verbal conversation that took place, which is written underneath on the subsequent, bottom page (Figure 4b. These pieces of dialogue are accessed by a "window" cut into the top page, whereby each encounter can be folded back to reveal the dialogues individually or together. Following two performative readings of the text and associated highlighting of key words and
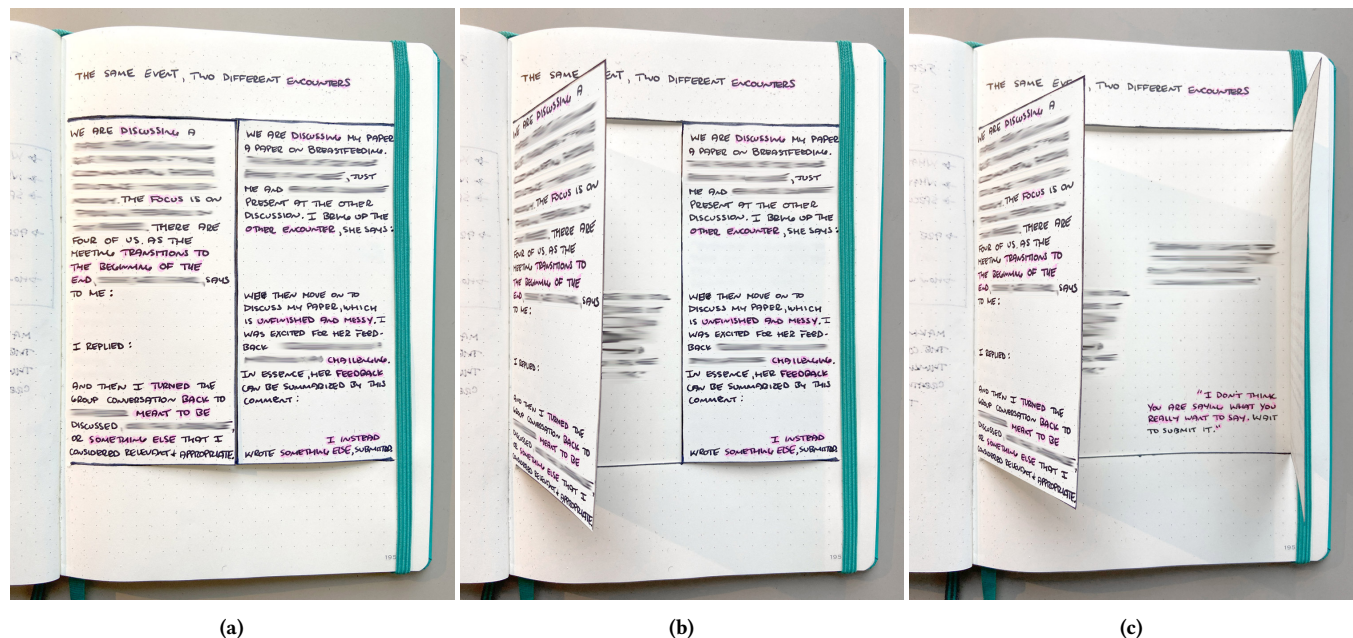
Figure 4: Images of a second performative text that revisits two different encounters during the same academic event during which I didn't feel good about sharing my breastfeeding experiences as research.

phrases, I also digitally obscured some of the text via a blur effect to preserve anonymity of people other than myself who were present.

I chose to revisit these encounters because they were a time during which I didn't feel good about sharing my breastfeeding experiences as research, and more specifically, I felt emotional discomfort towards my own well-being. This was a critical moment in deciding if I would continue writing and submit a particular paper. In the first encounter, a small group of researchers were discussing something else, yet the focus transitions to the beginning of the end for me upon being asked an unrelated question about breastfeeding. I felt angry regarding the formulation and what I perceived to be the irrelevance of the question. I quickly replied and turned back the conversation toward the topic that was meant to be. In the subsequent other encounter, I was meeting alone with a researcher who was present at the first encounter, yet this time to knowingly discuss a paper I was writing on breastfeeding. We briefly recounted the previous interaction and then upon turning to my paper I received the following feedback: "I don't think you are saying what you really want to say." It was further suggested that I should hold off on writing the paper. In relation to the first encounter still fresh on my mind, I began to think more critically about what particular details of experiences I wanted to keep closed and what I wanted to open for external engagement, and how this delineation was surprisingly unfinished and messy to myself.

In verbally performing the text, rather then reading the dialogues as built into the descriptions, I read the descriptions and then the dialogues. My performance accentuated the separation of scene and conversation in the composition of the text, and an associated vulnerability in not knowing when or where I might be asked a challenging question that I am not emotionally prepared to answer.

Placing the encounters side-by-side accentuates that even through setting boundaries between what is shared and not shared to guide research engagement and hopefully avoid my own emotional harm, there remains an uncertainty in what questions or comments might fill situational gaps. Yet the window highlights that even unanticipated openings can be closed as what is obscured now might be opened later. At this critical moment, I instead decided to proceed with submitting a revised version of the paper in question, but also decided that although I might not later be able to un-share this work, I can continue to assess within what conversations I participate and how.

3.3 A Third Performative Text

The third performative text revisits when I received reviews for a publication on my three breastfeeding explorations and was asked to add a content warning to my paper and an associated video presentation. This single page of text in Figure 5 is series of lines that alternate between what I perceive as neutral or mostly positive about the moment, and parts of the moment that troubles me. The positive aspects include receiving reviews that indicate acceptance, recognize that the design work in the publication is from care and love, and indicate that my voice on the topic should be heard. The negative aspects include the notion of the "content warning" itself, my struggle in understanding what it clarifies, and my worry in how my child will interpret it in the future. The page is folded so that the lines form an accordion whereby the positive aspects can be read with the negative ones hidden. The negative ones can also be read alone, but it is more difficult as the direction of the folds is meant to obscure them as opposed to the others.

(a)   (b)   (c)
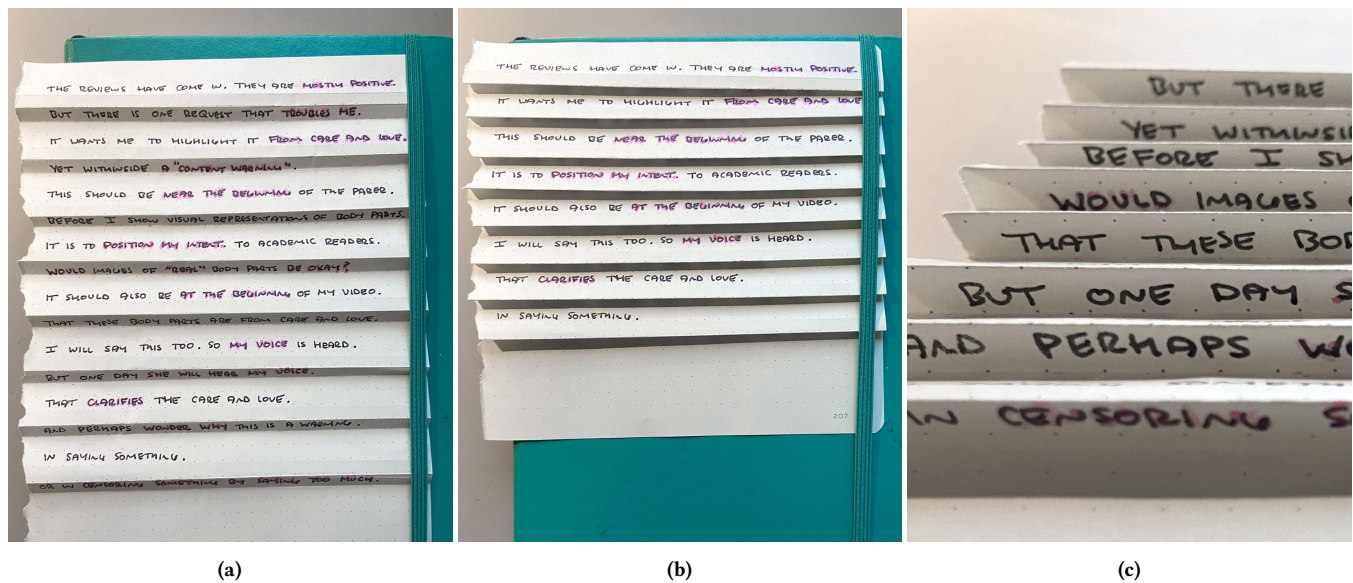
Figure 5: Images of a third performative text that revisits when I received reviews for a publication on my breastfeeding experiences and was asked to add a content warning to my paper and an associated video presentation.

I chose to revisit this moment because I felt (and continue to feel) conflicted in adding the content warning at the beginning of my paper and the video presentation of the paper, and unsure whether I should continue to include it in subsequent research dissemination. The motivation behind it was that sketches of a fiddling necklace depicting a fake breast could be triggering for readers. More specifically, representations of human body parts might provoke histories of severe physical injury across societies. This potential association itself opened new relations of harm that I had not considered regarding how my work might be received by academic audiences. Yet I was also troubled by what the label itself represents in positioning my intent and in the future if my child will wonder why I positioned my work in this way. In this moment, I felt ashamed at resenting the warning and wanting to hide my resentment.

In performing the text, I wasn't sure how to proceed from the three options presented: hold flat as in Figure 5a, read the top layer first and then the bottom as in Figure 5b, or read the bottom first and then the top as in Figure 5c. These folds in the text seemed to represent divisions between dealing with the present and speculating about the future, and navigating unknown relations between an academic community and my child. But there is also a possible peaking and a possible reading in between the lines due to the folds, which though can hide content, also hint at something not being said that perhaps wants to be. For example, my frustration at censoring something by saying too much by adding a content warning. Or, the folds perhaps reveal all that is being said amid some lines being granted a more prominent position near the beginning, such as my "real" intent not to trigger but to share my breastfeeding experiences. At this critical moment, I consented to the content warning for the publication and associated video in expecting that

one day she will hear my voice on paper and in person, and it be okay.

4   DISCUSSION OF A SPECULATIVE ETHICS

María Puig de la Bellacasa describes a "speculative ethics" as pointing to an ethics of care as "a hands-on, ongoing process of re-creation of 'as well as possible' relations and therefore one that requires a speculative opening about what a possible involves [61]". It understands ethics as thick and wicked in challenging normative moral obligations and rigid definitions of "well" that exclude the existence of many. It invokes speculation as an ongoing imagining of otherwise rather than seeking refuge in doing more of the same. It is from this perspective that I discuss the three performative texts as a speculative ethics: the following is meant to raise questions and welcome responses regarding how HCI might consider how to design and research with one's own bodily fluids.

4.1   Unsafe Spaces

This reflection relates to the first performative text about the potential material harm to myself and my family in preserving our milk with "magic powder". As illustrated in the text itself and its revisiting in this paper, I attempted to create what might be called a "safe space" by conducting the experiment alone without the physical presence of my child and my partner. Although I might have been alone during that particular moment, my kitchen is a space that is frequently visited and used by other people at other times. Thus, the potential harm is not isolated to that moment of experimentation as materials linger and travel, and are not limited to those that a human can see, touch, or contain. This includes potential harm to other people later being in our kitchen. It also includes breasts such as mine that collect chemicals absorbed by the human body through the breathing of microscopic particles,

which can be transferred to another human via breastfeeding [71]. My fear of breathing in and out after the magic powder began to smoke and smell, signals not just harm to me or the fluids being designed with, but also those that are still in production. From this incident, I reflected upon all the chemicals that I materially breathe and interact with (seen and unseen) as I move between spaces, and not only when I am doing an "act" of research.

While it might be argued that this expresses a need for more isolated or "safe spaces" for bodily fluids to be designed within to prevent material harm to human bodies, such as through air vents and purifiers; I argue instead that perhaps less consideration should be given to making more restrictions, and more consideration given to how the experiences of spaces inform how meaning is made in designing with bodily fluids. For example, all of my designing with milk has taken place at home because those are the spaces that I share with my family and feel most comfortable in understanding my lived realities of breastfeeding and engaging with our milk. Yet also, bodily fluids such as human milk are not only experienced by humans in the spaces that they are designed with or studied. They continuously travel, absorb, transform, and perform as biological and social materials. Examples of this include all the other chemicals that a person encounters as human bodies travel between places, the potential lingering of magic powder that might be absorbed later by myself or others, and the discussing of experiences with bodily fluids as exemplified by the second performative text. Potentially separating research spaces from all the other everyday places of breastfeeding risks neglecting the people, contexts, and materials that our milk and our bodies interact with as we move between and across spaces.

While I will not use magic powder again and regret doing so in the moment presented, I see my discomfort as a call for support in designing within the everyday "unsafe spaces" that acknowledge the entangled material relationships between bodies and places as fluid and trans-corporeal [5]. This call is particularly relevant in light of working from home that might be necessitated by COVID-19 restrictions, family responsibilities, or in my situation, an inti-mate design material. It recognizes the situatedness of designing, and in particular, designing with one's own bodily fluids or other materials that might be personal or leaky. As previously described in the overview of my design process of engaging with our milk, it has been expressed at work to be brought home for consumption by my child and to be made into fiddling necklaces. Thus, "unsafe" acknowledges that spaces of experience and exploration are not iso-lated from one another, and supporting such research also involves considering a transferring between contexts.

4.2   Situated Escapes

This reflection relates to the second performative text of a moment of discomfort regarding my own emotional well-being in sharing my breastfeeding experiences as research. The performance ac-centuates uncertainty of potential encounters that are a result of sharing my research: how sharing intends to build new relations that open for even more uncertainty and potential vulnerability. To share or not to share is not an isolated moment of engagement. In addition to the potential ongoing emotional labor that might result [7], there is an additional tension within wanting research to spread and make impact, and yet not knowing the reach of its impact. My feelings of discomfort were (and still are) heightened by unknown rhythms and temporalities of breastfeeding through milk as agentic matter [11]. This understands breastfeeding as a process that cannot be fully controlled, and that is constantly changing and in flux. I do not know how long I will have access to our milk as a design material. While I want to share my experiences while they feel as if they are "being lived", I simultaneously do not know when they will feel expired.

Within such uncertainties, I am expected to make research de-cisions that align with expectations of my progress as a PhD stu-dent in Sweden. This includes departmental milestones that order changes in my salary and publishing calls that guide opportunities for dissemination, such as writing for a conference as described in the second performative text. While these can be helpful in pro-viding structure to a PhD education, they might also be difficult to align with the uncertainty of bodily processes or the potential for research sentiments to change. It can be difficult to opt out after initially consenting. In addition to the second performative text, this can also be seen in subsequent design decisions to the first performative text from which I realized that it might not be possible for me to solidify and preserve our human milk. This is primarily due to my desire to avoid "magic powder", unless I find an alternative approach, and a reconsidering of my design intent relative to our current breastfeeding experiences. This can also be seen in the third performative text whereby after agreeing to and following through with the content warning, I now question if and how I should proceed with it.

This calls for additional support in autobiographic research and beyond in sharing difficult felt experiences, such as those that might relate to designing with bodily fluids, and how to support situated escapes that allow for pausing, abandoning, and altering research plans. In particular, designing within my breastfeeding relationship has been inseparable from bodily transformations and changes that include conflicting emotions and desires regarding how I feel about breastfeeding and how I feel about sharing breastfeeding. Decisions such as whether to publish and what to specifically publish about have been deeply informed by not knowing how long I will have access to our milk and whether I feel good sharing right now. Such uncertainties are integral in designing with one's own bodily flu-ids. This necessitates recognizing temporalities of bodily fluids and their felt impact on research decisions that might warrant situated escapes. More broadly, this calls for an ethics that considers win-dows of opportunity within how experiences are both open and closed, with or without human intention.

4.3   Censored Inclusion

This reflection relates to the third performative text in which I felt uncomfortable at being asked to add a content warning at the beginning of an accepted publication about breastfeeding [37]. As described, in assessing the potential benefits and harms of the warn-ing, I tried to separate between the two audiences I was considering (i.e. academic community and my child) and the related temporali-ties of when the warning might read (i.e. in the present by others and in the future by her). As performed, I struggled with these divi-sions as they cannot be so cleanly delineated or compared. From my

privileges, I am not in a position to speculate or fully understand the diverse possibilities of how my work might be misread, or even interpreted as intended within its full academic context, and still give rise to feelings of discomfort or harm for people external to my family. This might happen now or later. Yet as I reasoned for that publication and my child's potential later interpretations of it, I anticipate opportunities to discuss them in person with her.

In navigating this moment, I considered the content warning a form of censorship that aimed to guide potential readings of it through a label that I found triggering. This was due to it implying that my work might not be from care and love, and from what I perceived to be a confusing formulation of "representations of human body parts". In these ways, the warning has an agency to not only guide or limit interpretations, but also create new ones. I wondered, what is it about my work that renders it not from care and love? Is it that the designs were motivated by physical and social frustrations of breastfeeding that run counter to expectations of mothering? And, what is it about my work that is triggering in relation to a vast range of representations of human body parts in HCI research? That mine are being worn and honored in perhaps a clear political statement? These are not unique to my research [17], and also in contradiction with the subsequent honor my publication being discussed received for diversity and inclusion. I see this tension as inseparable from striving to operate within disciplinary expectations, such as unwaveringly committing to research and being steered by publication opportunities as in the second performative text, yet also not feeling good about being rewarded for such obedience. It prompts considering what work content warnings do beyond protecting potential readers.

Despite my discomfort, I am not advocating against content warnings or restrictions altogether, I am instead questioning when, where, and how they are put into practice in academic dissemination. This includes how they might draw attention to or away from particular content. For example, Pendse et al. [57] integrate bold CW tags throughout their paper prior to quotes that have graphic descriptions of suicide or self-harm. This approach is straightforward in isolating specific content while allowing for the majority of the publication to remain accessible to all readers. In contrast, Fox et al. [26] integrate a warning as part of the packaging design for a speculative catalog on menstruation practices. Their approach is partially in response to feedback and also deliberately critical of menstruation as taboo through its graphical implementation.

I call for further considering of alternative forms and creative practices that extend to intimate topics that explicitly engage with an intimate questioning of one's self such as through bodily fluids. For example, an important learning for myself during a review process was in regards to the etymology of the word "nursing" that comes from histories of forced wet-nursing practices. This was a moment in which I felt grateful for the knowledge and request to remove this word as an alternative to "breastfeeding" in general, which I did and continue to do unless in reference to its history. While this might be seen to grant language more power than it deserves [8], I see it as mattering in contesting how privileged forms of breastfeeding are often rendered more visible and more "real" [46]. I also see this as illustrating a potential care for words as often seen in feminist theory [e.g. 3, 34] that does not necessary bar or suppress them, but opens them for engagements with past, present, and future relations. Moving forward, I wonder in what other ways, such as in the aforementioned mentioned examples [26, 57], citation practices [4], or lingering questions [39], that HCI might welcome an ethics of encouraging relations in which censorship is not about exclusion, and instead about lively inclusion.

5 AN OPENING

In this essay I have speculated on ethical possibilities for HCI regarding designing with a researcher's own bodily fluids. This has been through a performative engagement with moments of discomfort and harm within a sharing of my breastfeeding experiences and our milk as a design material. In performing these texts through written and spoken words, I have engaged with hesitations, doubts, grief, and vulnerability as an ongoing practice of speculation. This keeps open how I might care for conflicting responsibilities and relations inherent to a corporeal generosity [18] of gifting oneself as an opening to others. An intimate engagement with the self as socially and materially entangled aims to situate my subjective standpoint in knowledge production and contribute towards understandings of more-than-human agencies in HCI.

The performative texts presented have been helpful and therapeutic in navigating entanglements between personal and research decisions. This edge also illustrates a boundary between situated and medical ethics in designing with bodily fluids within informal or formal health care. While I am hesitant to support the medicalization of breastfeeding or human milk because of how it has historically contributed to a "non-choice" for mothers in infant feeding [45], I do aim for my approach to contribute towards a feminist perspective of medical ethics in designing with bodily fluids. This includes cultivating ways to consider autonomy as relational in making and supporting design decisions in caring for health and well-being, and to reflect upon disciplinary structures in design that regulate situated and felt experiences.

The performative texts themselves have also been emotionally exhausting and not without careful consideration in sharing them. As such, I have intentionally not created or shared performative texts about some moments. In addition to my privileges as a breastfeeding parent, I am also privileged by supportive research mentors and colleagues who care with me in these moments. This is important in highlighting the personal and professional structures that are inseparable from my breastfeeding experiences and the three performative texts as research. And while I offer performative texts as a contribution for researchers navigating an intimate engagement with the self within broader research aims to decenter the human, I also propose them as valuable without a sharing beyond oneself or in research dissemination. In this way, they cannot be separated from my hopeful openings for HCI to consider possibilities of unsafe spaces, situated escapes, and censored inclusion within an ethics of care.

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REFERENCES

[1] [n. d.]. The Code affirms an obligation of computing professionals to use their skills for the benefit of society. https://www.acm.org/code-of-ethics

[2] [n. d.]. Etikprövningsmyndigheten. https://etikprovningsmyndigheten.se/

[3] Sara Ahmed. 2006. *Queer Phenomenology: Orientations, Objects, Others.* Duke University Press. https://doi.org/10.1215/9780822388074

[4] Sara Ahmed. 2016. *Living a Feminist Life.* Duke University Press.

[5] Stacy Alaimo. 2010. *Bodily Natures: Science, Environment, and the Material Self.* Indiana University Press.

[6] Bryant Keith Alexander. 2000. Skin flint (or, the garbage man's kid): A generative autobiographical performance based on Tami Spry's tattoo stories. *Text and Performance Quarterly* 20, 1 (Jan. 2000), 97–114. https://doi.org/10.1080/10462930009366286

[7] Madeline Balaam, Rob Comber, Rachel E. Clarke, Charles Windlin, Anna Ståhl, Kristina Höök, and Geraldine Fitzpatrick. 2019. Emotion Work in Experience-Centered Design. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19).* Association for Computing Machinery, Glasgow, Scotland Uk, 1–12. https://doi.org/10.1145/3290605.3300832

[8] Karen Barad. 2003. Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter. *Signs: Journal of Women in Culture and Society* 28, 3 (March 2003), 801–831. https://doi.org/10.1086/345321

[9] Kirsten Bell and Danielle Elliott. 2014. Censorship in the name of ethics: critical public health research in the age of human subjects regulation. *Critical Public Health* 24, 4 (Oct. 2014), 385–391. https://doi.org/10.1080/09581596.2014.936727

[10] Heidi R. Biggs, Jeffrey Bardzell, and Shaowen Bardzell. 2021. Watching Myself Watching Birds: Abjection, Ecological Thinking, and Posthuman Design. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems.* Association for Computing Machinery, New York, NY, USA, 1–16. https://doi.org/10.1145/3411764.3445329

[11] Kate Boyer. 2018. Breastmilk as Agentic Matter and the Distributed Agencies of Infant Feeding. *Studies in the Maternal* 10, 1 (Aug. 2018). https://doi.org/10.16995/sim.257

[12] Barry Brown, Alexandra Weilenmann, Donald McMillan, and Airi Lampinen. 2016. Five Provocations for Ethical HCI Research. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16).* Association for Computing Machinery, New York, NY, USA, 852–863. https://doi.org/10.1145/2858036.2858313

[13] Nadia Campo Woytuk, Marie Louise Juul Søndergaard, Marianela Ciolfi Felice, and Madeline Balaam. 2020. Touching and Being in Touch with the Menstruating Body. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20).* Association for Computing Machinery, New York, NY, USA, 1–14. https://doi.org/10.1145/3313831.3376471

[14] Norman K. Denzin. 2018. *Performance Autoethnography: Critical Pedagogy and the Politics of Culture* (2 ed.). Routledge, London. https://doi.org/10.4324/9781315159270

[15] Audrey Desjardins and Aubree Ball. 2018. Revealing Tensions in Autobiographical Design in HCI. In *Proceedings of the 2018 Designing Interactive Systems Conference (DIS '18).* ACM, New York, NY, USA, 753–764. https://doi.org/10.1145/3196709.3196781

[16] Laura Devendorf, Kristina Andersen, and Aisling Kelliher. 2020. The Fundamental Uncertainties of Mothering: Finding Ways to Honor Endurance, Struggle, and Contradiction. *ACM Transactions on Computer-Human Interaction* 27, 4 (Sept. 2020), 26:1–26:24. https://doi.org/10.1145/3397177

[17] Laura Devendorf, Kristina Andersen, and Aisling Kelliher. 2020. Making Design Memoirs: Understanding and Honoring Difficult Experiences. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20).* Association for Computing Machinery, Honolulu, HI, USA, 1–12. https://doi.org/10.1145/3313831.3376345

[18] Rosalyn Diprose. 2012. *Corporeal Generosity: On Giving with Nietzsche, Merleau-Ponty, and Levinas.* SUNY Press.

[19] Laura L. Ellingson. 2006. Embodied Knowledge: Writing Researchers' Bodies Into Qualitative Health Research. *Qualitative Health Research* 16, 2 (Feb. 2006), 298–310. https://doi.org/10.1177/1049732305281944

[20] Carolyn Ellis. 2004. *The Ethnographic I: A Methodological Novel about Autoethnography.* Rowman Altamira.

[21] Carolyn Ellis. 2017. Manifesting Compassionate Autoethnographic Research: Focusing on Others. *International Review of Qualitative Research* 10, 1 (May 2017), 54–61. https://doi.org/10.1525/irqr.2017.10.1.54

[22] Eve Ensler and Dramatists Play Service (New York N.Y.). 2000. *The Vagina Monologues.* Dramatists Play Service Inc.

[23] Sara Eriksson, Kristina Höök, Richard Shusterman, Dag Svanes, Carl Unander-Scharin, and Åsa Unander-Scharin. 2020. Ethics in Movement: Shaping and Being Shaped in Human-Drone Interaction. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20).* Association for Computing Machinery, Honolulu, HI, USA, 1–14. https://doi.org/10.1145/3313831.3376678

[24] Laura Forlano. 2017. Maintaining, Repairing and Caring for the Multiple Subject. *continent.* 6, 1 (March 2017), 30–35–35.

[25] Lauren Fournier. 2021. *Autotheory as Feminist Practice in Art, Writing, and Criticism.* MIT Press.

[26] Sarah Fox, Noura Howell, Richmond Wong, and Franchesca Spektor. 2019. Vivewell: Speculating Near-Future Menstrual Tracking through Current Data Practices. In *Proceedings of the 2019 on Designing Interactive Systems Conference (DIS '19).* Association for Computing Machinery, New York, NY, USA, 541–552. https://doi.org/10.1145/3322276.3323695

[27] Christopher Frauenberger. 2019. Entanglement HCI The Next Wave? *ACM Transactions on Computer-Human Interaction* 27, 1 (Nov. 2019), 2:1–2:27. https://doi.org/10.1145/3364998

[28] Christopher Frauenberger, Marjo Rauhala, and Geraldine Fitzpatrick. 2017. In-Action Ethics. *Interacting with Computers* 29, 2 (March 2017), 220–236. https://doi.org/10.1093/iwc/iww024

[29] Lisbeth Frølunde. [n. d.]. IKH - PhD course: Autoethnographic methods: Building ethnographic reflexivity through creative arts-based practice. https://study.ruc.dk/class/view/24047

[30] William Gaver. 2012. What Should We Expect from Research Through Design?. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '12).* ACM, New York, NY, USA, 937–946. https://doi.org/10.1145/2207676.2208538

[31] Gerd Geleff Nielsen and Teresa Almeida. 2021. Designing with the Immune System: The Abject, Bodily Fluids, and Micro(be) Interactions. Association for Computing Machinery (ACM).

[32] Carol Gilligan. 1993. *In a Different Voice: Psychological Theory and Women's Development.* Harvard University Press.

[33] Barbara Groot, Annyk Haveman, and Tineke Abma. 2020. Relational, ethically sound co-production in mental health care research: epistemic injustice and the need for an ethics of care. *Critical Public Health* 0, 0 (May 2020), 1–11. https://doi.org/10.1080/09581596.2020.1770694

[34] Donna J. Haraway. 2016. *Staying with the Trouble: Making Kin in the Chthulucene.* Duke University Press.

[35] Karey Helms. 2017. Leaky Objects: Implicit Information, Unintentional Communication. In *Proceedings of the 2017 ACM Conference Companion Publication on Designing Interactive Systems (DIS '17 Companion).* Association for Computing Machinery, Edinburgh, United Kingdom, 182–186. https://doi.org/10.1145/3064857.3079142

[36] Karey Helms. 2019. Do You Have to Pee? A Design Space for Intimate and Somatic Data. In *Proceedings of the 2019 on Designing Interactive Systems Conference (DIS '19).* Association for Computing Machinery, San Diego, CA, USA, 1209–1222. https://doi.org/10.1145/3322276.3322290

[37] Karey Helms. 2021. Entangled Reflections on Designing with Leaky Breastfeeding Bodies. In *Designing Interactive Systems Conference 2021 (DIS '21).* Association for Computing Machinery, New York, NY, USA, 1998–2012. https://doi.org/10.1145/3461778.3462048

[38] Karey Helms and Ylva Fernaeus. 2021. Troubling Care: Four Orientations for Wickedness in Design. In *Designing Interactive Systems Conference 2021 (DIS '21).* Association for Computing Machinery, New York, NY, USA, 789–801. https://doi.org/10.1145/3461778.3462025

[39] Karey Helms, Marie Louise Juul Søndergaard, and Nadia Campo Woytuk. 2021. Scaling Bodily Futures for Utopian Fabulations. In *Proceedings of the 9th Bi-Annual Nordic Design Research Society Conference: Matters of Scale.*

[40] James Hodge, Sarah Foley, Rens Brankaert, Gail Kenning, Amanda Lazar, Jennifer Boger, and Kellie Morrissey. 2020. Relational, Flexible, Everyday: Learning from Ethics in Dementia Research. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20).* Association for Computing Machinery, New York, NY, USA, 1–16. https://doi.org/10.1145/3313831.3376627

[41] Sarah Homewood, Harvey Bewley, and Laurens Boer. 2019. Ovum: Designing for Fertility Tracking as a Shared and Domestic Experience. In *Proceedings of the 2019 on Designing Interactive Systems Conference (DIS '19).* Association for Computing Machinery, San Diego, CA, USA, 553–565. https://doi.org/10.1145/3322276.3323692

[42] Sarah Homewood, Marika Hedemyr, Maja Fagerberg Ranten, and Susan Kozel. 2021. Tracing Conceptions of the Body in HCI: From User to More-Than-Human. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21).* Association for Computing Machinery, New York, NY, USA, 1–12. https://doi.org/10.1145/3411764.3445656

[43] bell hooks. 1996. *Killing Rage: Ending Racism.* Henry Holt and Company. Google-Books-ID: 3JlNFYKLheUC.

[44] Li Jönsson, Kristina Lindström, and Åsa Ståhl. 2021. The thickening of futures. *Futures* 134 (Dec. 2021), 102850. https://doi.org/10.1016/j.futures.2021.102850

[45] Stephanie Knaak. 2005. Breast-feeding, Bottle-feeding and Dr. Spock: The Shifting Context of Choice*. *Canadian Review of Sociology/Revue canadienne de sociologie* 42, 2 (2005), 197–216. https://doi.org/10.1111/j.1755-618X.2005.tb02461.x _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1755-618X.2005.tb02461.x.

[46] Robyn Lee. 2018. *The Ethics and Politics of Breastfeeding: Power, Pleasure, Poetics.* University of Toronto Press.

[47] Ann Light, Irina Shklovski, and Alison Powell. 2017. Design for Existential Crisis. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17).* Association for Computing Machinery, New

York, NY, USA, 722–734. https://doi.org/10.1145/3027063.3052760

[48] Thomas R. Lindlof and Bryan C. Taylor. 2002. *Qualitative Communication Research Methods*. SAGE.

[49] Jen Liu, Daragh Byrne, and Laura Devendorf. 2018. Design for Collaborative Survival: An Inquiry into Human-Fungi Relationships. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, 40:1–40:13. https://doi.org/10.1145/3173574.3173614

[50] Audre Lorde. 2017. *A Burst of Light: And Other Essays*. Courier Dover Publications.

[51] D. Soyini Madison. 2011. *Critical Ethnography: Method, Ethics, and Performance*. SAGE. Google-Books-ID: 5tBz_R2pI6MC.

[52] Annette N Markham. 2003. Critical Junctures and Ethical Choices in Internet Ethnography. *Applied Ethics in Internet Research* (2003), 51–63.

[53] Annette N Markham, Katrin Tiidenberg, and Andrew Herman. 2018. Ethics as Methods: Doing Ethics in the Era of Big Data Research—Introduction. *Social Media + Society* 4, 3 (July 2018). https://doi.org/10.1177/2056305118784502

[54] MarkyBabyMilkJewelry. [n. d.]. Breastmilk Preserving Powder Breastmilk Jewelry Breastmilk | Etsy. https://www.etsy.com/se-en/listing/668860664/breastmilk-preserving-powder-breastmilk?utm_source=OpenGraph&utm_medium=PageTools&utm_campaign=Share

[55] Carman Neustaedter, Tejinder K. Judge, and Phoebe Sengers. 2014. Autobiographical Design in the Home - Studying and Designing Technology for Domestic Life [Book]. In *Studying and Designing Technology for Domestic Life: Lessons from Home*. https://www.oreilly.com/library/view/studying-and-designing/9780128005552/XHTML/B9780128005552000083/B9780128005552000083.xhtml ISBN: 9780128006146.

[56] Carman Neustaedter and Phoebe Sengers. 2012. Autobiographical Design in HCI Research: Designing and Learning Through Use-it-yourself. In *Proceedings of the Designing Interactive Systems Conference (DIS '12)*. ACM, New York, NY, USA, 514–523. https://doi.org/10.1145/2317956.2318034

[57] Sachin R Pendse, Amit Sharma, Aditya Vashistha, Munmun De Choudhury, and Neha Kumar. 2021. "Can I Not Be Suicidal on a Sunday?": Understanding Technology-Mediated Pathways to Mental Health Support. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*. Association for Computing Machinery, New York, NY, USA, 1–16. https://doi.org/10.1145/3411764.3445410

[58] Louise Phillips, Maria Bee Christensen-Strynø, and Lisbeth Frølunde. 2021. Thinking with autoethnography in collaborative research: A critical, reflexive approach to relational ethics. *Qualitative Research* (July 2021), 14687941211033446. https://doi.org/10.1177/14687941211033446

[59] Della Pollock. 1998. Performing writing. In *The ends of performance*, Peggy Phelan and Jill Lane (Eds.). New York University Press, 73–103.

[60] Kristina Popova, Rachael Garrett, Claudia Núñez-Pacheco, Airi Lampinen, and Kristina Höök. 2022. Vulnerability as an ethical stance in soma design processes. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. New Orleans, LA, USA. https://doi.org/10.1145/3491102.3501994 forthcoming.

[61] María Puig de la Bellacasa. 2017. *Matters of Care: Speculative Ethics in More Than Human Worlds*. University of Minnesota Press, Minneapolis.

[62] Pedro Sanches, Noura Howell, Vasiliki Tsaknaki, Tom Jenkins, and Karey Helms. 2022. Diffraction-in-action: Designerly Explorations of Agential Realism Through Lived Data. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. New Orleans, LA, USA.

[63] Shelley. 2018. Make Milk Plastic in the Kitchen Chemistry Project for Kids. https://www.steampoweredfamily.com/activities/make-plastic-from-milk/

[64] Margrit Shildrick. 2008. The Critical Turn in Feminist Bioethics: The Case of Heart Transplantation. *International Journal of Feminist Approaches to Bioethics* 1, 1 (2008), 28–47.

[65] Anna Ståhl, Madeline Balaam, Rob Comber, Pedro Sanches, and Kristina Höök. 2022. Making New Worlds - Transformative Becomings with Soma Design. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. New Orleans, LA, USA.

[66] Marie Louise Juul Søndergaard, Ozgun Kilic Afsar, Marianela Ciolfi Felice, Nadia Campo Woytuk, and Madeline Balaam. 2020. Designing with Intimate Materials and Movements: Making "Menarche Bits". In *Proceedings of the 2020 ACM Designing Interactive Systems Conference (DIS '20)*. Association for Computing Machinery, New York, NY, USA, 587–600. https://doi.org/10.1145/3357236.3395592

[67] Joan C. Tronto. 1993. *Moral Boundaries: A Political Argument for an Ethic of Care*. Psychology Press.

[68] Vasiliki Tsaknaki, Karey Helms, Marie Louise Juul Søndergaard, and Marianela Ciolfi Felice. 2021. "Vibrant Wearables": Material Encounters with the Body as a Soft System. *Journal of Textile Design Research and Practice* 9, 2 (2021), 142–163. https://doi.org/10.1080/20511787.2021.1923202

[69] Ron Wakkary. 2021. *Things We Could Design: For More Than Human-Centered Worlds*. MIT Press.

[70] Danielle Wilde. 2021. The SHIT! project. Food-based world-making: Recasting human|microbiome relationships beyond shame and taboo. *Futures* (Oct. 2021). https://doi.org/10.1016/j.futures.2021.102853

[71] Florence Williams. 2012. *Breasts: A Natural and Unnatural History*. Text Publishing Company.

[72] Heather Wiltse. 2020. *Relating to Things: Design, Technology and the Artificial*. Bloomsbury Academic.